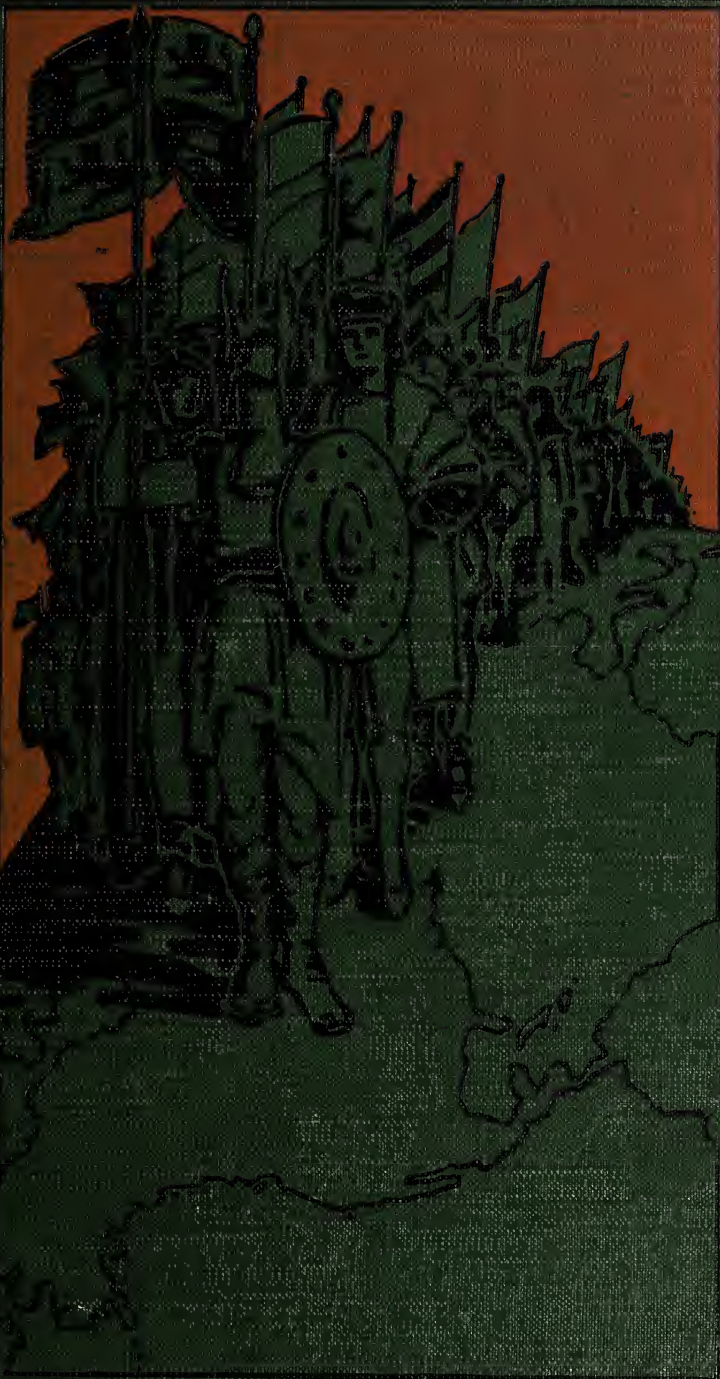


J. RUSSELL SMITH



HUMAN
US

GEOGRAPHY

Ex LIBRIS
UNIVERSITATIS
ALBERTAENSIS



See Lib.
on VIII



Digitized by the Internet Archive
in 2016 with funding from
University of Alberta Libraries

<https://archive.org/details/humanusegeographsmi>



Fig. A. USING THE EARTH—A PAGEANT OF HUMAN PROGRESS. This picture suggests our industrial world. You will find here something about the development of many things of which you will read in this book.

HUMAN USE GEOGRAPHY

BY

J. RUSSELL SMITH, Ph.D., Sc.D.

PROFESSOR OF ECONOMIC GEOGRAPHY, COLUMBIA UNIVERSITY

AUTHOR OF

"Home Folks," a Geography for Beginners; "World Folks"; "American
Lands and Peoples"; "Foreign Lands and Peoples"; "Our
Industrial World"; "North America"

BOOK TWO

The Great Desert and Its Oases

Mediterranean Lands

Europe

Asia

Southern Lands: Africa, Australia, South America

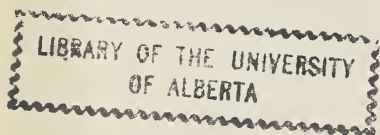
The United States in Its World Relations

THE JOHN C. WINSTON COMPANY

CHICAGO
DALLAS

PHILADELPHIA
SAN FRANCISCO

TORONTO
ATLANTA



Copyright, 1936, by
THE JOHN C. WINSTON COMPANY
Copyright, 1934, 1933, 1932, 1930, by The J. C. W. Co.



PRINTED IN THE U. S. A.
AT THE INTERNATIONAL PRESS
THE JOHN C. WINSTON COMPANY, PROPRIETORS
PHILADELPHIA

TO TEACHERS

THIS BOOK AND THE SERIES

HUMAN USE GEOGRAPHY, Book II, completes in two volumes a study of the countries of the world (*as countries*) by the system that has been aptly called *single-cycle* — *plus*. The *single-cycle* part of this book presents the Eastern Hemisphere and South America; its companion, HUMAN USE GEOGRAPHY BOOK I, introduces the subject by a series of studies of *type regions* and then gives a detailed study of North America and the island possessions of the United States.

In the two texts all of the countries of the world are presented as thoroughly as space permits. In this book the *plus* part of the *single-cycle* — *plus* system appears in the last part — a special study of the United States in its world relations.

The age of science and machinery has made a new world in which nations may no longer be treated merely as independent units. The complicated machines of today require for their construction raw materials of which our grandfathers never heard. Because we need these materials, we are dependent on countries with which grandfather had no more trade, when he was a boy, than he had with the moon. Investment and trade created by science and machinery have tied the nations together in a new way — whether they wish it or not. This study of interrelationships and interdependence of the United States with other nations and other nations with each other and with our own country is a series of new facts which, if well taught, not only develops respect, sympathy, and understanding among peoples but also provides a well-rounded summary and review of the geography of the earlier grades.

WHERE SHALL WE BEGIN?

Where is the best place to begin the study of the geography of the Eastern Hemisphere? For many years all authors of geography texts in use in the United States presented the New England States first, influenced, no doubt, by the fact that New England was settled first. To begin with New England, the region whose type of life and geographic relationships were the most complicated, was a pedagogic error. In my two-cycle series of elementary texts, HUMAN GEOGRAPHY, BOOK ONE — PEOPLES AND COUNTRIES, and BOOK TWO — COUNTRIES, RE-

GIONS AND TRADE, I started with those parts of our country whose life and land forms were more simple and therefore more easily within the comprehension of pupils in the lower levels of education.

This change won the approval of teachers everywhere. I therefore follow the same principle in choosing a starting place for HUMAN USE GEOGRAPHY, BOOK II.

This book starts in the center of the Eurasian land mass. There, on the vast flat grass lands, are tent-dwelling nomads, one of the earliest types of human society. These nomadic people are living today the simple life that they have lived for thousands of years.

Also, this area was the original homeland of peoples who migrated, century after century, and went forth with their families and flocks to settle in Europe, India, and China. Here on these grass lands of the nomads we see one of the simple yet vivid relationships of man to the geographic environment. We see the surviving past. We also see a relationship between geography and the history of peoples we meet in many later chapters of this book. Awareness of such relationships between different fields of knowledge is one of the newer trends in present-day education.

This book then swings over to the Mediterranean lands, to those countries where life is more simple than in the industrial regions of northwestern Europe. In studying the geography of the Mediterranean region the pupil will again sense something of the relationship between the physical characteristics of a given region and its history and cultural influence.

Examples of this relationship between history and the geographic setting may be found: in reasons for a great civilization in the Nile Valley (page 29); in the influence throughout recorded history of the Mediterranean Sea on the development and spread of civilization (pages 50–55); in the periods in the development of Poland (pages 188–189); and in many other places throughout the text.

THE APPLIED SCIENCE METHOD

You may teach a principle of geography abstractly, depending upon memory to reproduce the principle when it is wanted. But this old *logical* method has made count-

TO TEACHERS

less thousands frown, and finally to miss the point. The *psychological* method, "meeting the felt want," is the underlying idea that guided me in the arrangement of facts and ideas in this book. Wherever possible, this book *explains a principle while describing an important situation*. For example, the first twelve pages explain nomadism and at the same time describe the central Asian steppes, and also throw an understanding light on some of the great sweeps of human history. By this method — *explaining actual situations* — you accomplish four objectives at one time: (1) you teach a principle of geography; (2) you describe a part of the earth; (3) you make both easier to understand; (4) you make both easier to remember than if the principle had been presented unrelated to a concrete situation.

You can see this method used in the section "Why are deserts?" (page 16); why most of the exports of Persia are light, valuable articles (page 44); the Mediterranean climate (page 56, and — cross reference — page 95); why life in the Balkans partakes so much of a past age (page 175); the continental climate of Hungary and Rumania (page 181); and in many other places throughout the text.

THE USEFUL TYPE-STUDY

It is true that the psychological method, wherein we explain a *situation* and teach a principle, demands the presentation of detail, and this takes space. But it also saves space and time by creating a *type*. With a *type-study* thoroughly mastered, a brief cross reference makes it explain an industry or a locality in another part of the country or in another continent. Thus one type is used to teach quickly a similar type; tiresome repetition is avoided; and continuous informal review and *comparison* are inevitable.

For example, after the type study of Mediterranean agriculture (pages 57-58) is mastered, other similar regions in South Africa (page 303) and Australia (page 346) and Chile (page 411) need but little more than a cross reference to the minutely explained type. This makes the new region clear with the briefest possible expenditure of time. And could there be a better review, and one that comes in so naturally?

Again, on pages 370-382 I use Colombia as the type of South American country with

zones of climate reaching from the hot, low plain, with equatorial heat and sultry breezes, to the eternal snow cap with its arctic freezes. Here in a short distance altitude alone gives zones of bananas, coffee and corn, wheat and barley, and treeless, foggy Alpine pastures. All this we described *fully* for Colombia. On both sides she has neighbors with similar lands — briefly described by reference to the *type*.

THE CLINCHING CROSS REFERENCE

Knowledge is built into the mind piece by piece. This book does it by the continuous use of cross references, bringing out *relationships*. Follow through these three cross references, and you will see for yourself how they will build geography into the pupil's mind: page 43, last paragraph, reference to a picture. The legend of the picture refers to a map, to show *where*, as well as *what* and *why*. It is important to see that the pupils follow and understand the cross references.

UNITS OF STUDY

In this book the subject matter is divided into units. The units are short; and each is immediately followed by questions, reviews, and self-activity materials. Many chapters begin with a motivating introduction.

In describing a country and presenting the elements of its geographic background, the *dominating* physical and human factors of each region are emphasized. This gives variety and freshness to every teaching unit.

THE FACTS AND CLASSIFIED KNOWLEDGE

So much is included in the field of geography that those who present the subject are in danger of attempting to teach too many boring and useless facts, and to forget that the most valuable geographic material is found chiefly in *ideas and relationships*. This book classifies knowledge in ways not found in other texts for this grade. Whereas a hundred unrelated facts may bewilder the child, the same facts when classified become usable and assist education. To see how masses of facts have been grouped for quick and easy presentation, read the first half of the chapter on the Mediterranean countries (pages 50-67). Examine the exercises on pages 210-211, where we get the general view of Europe and adjacent lands.

TO TEACHERS

On pages 374-375 the account of a coffee grower's life in the Andean mountain valley is a telling example of the massing of facts in a way that *classifies knowledge*.

The statistical Appendix (page A-1) is a rich mine of material for comparison.

THE HISTORICAL APPROACH

A geography text may merely attempt a snapshot of the world as it is today, or it may attempt to give some feeling for the idea of *development and history* by giving some explanation of how things came to be as they are. Most of the history I studied was *episode*—dramatic episode, with no connection with the earth save that Hannibal crossed the Alps with an army—quite a stunt, I remember it was.

To see what I mean by *development* and history read the first twenty-two pages of this book. There are many other cases of it—white Brazil (page 397); Negro Brazil (page 397); the Incas and Peru (page 414).

VOCABULARY AND STYLE

Specialists in English have read the manuscript critically to make sure that the words are of the right age level. The style of the book is such that many children will be found reading it for fun—and this makes teaching easier.

TEACHING BY THE HUMAN STORY

Great teachers of all times have used the concrete human story to make clear an abstract point, and to make it stay in the mind of the hearer. Many stories of actual experiences are presented in this book. Stories show how man adjusts himself to his environment, and are most effective in presenting the fundamental geography of a country. See Toni Damiani (pages 59-60); Ian MacKenzie (pages 103-104); Mary McGregor (pages 106-107); Jean Ribot and the French farm village (pages 134-137); the journey up the Magdalena (pages 370-373); the Negro of the hot, wet forest (pages 378-379); Antonio, the Chilean farm boy (pages 410-411); Chico, the boy in the nitrate desert (page 412).

LEARN BY SEEING AND DOING

It is highly desirable that geography students of all ages should if possible see many of the things about which they read. The next best thing is to see a good picture.

The illustrations of this book have been selected with the greatest care. Many of them I have taken myself. Let the pictures and their legends help to make the world real to the students, and be sure that they understand what the pictures show and get all of the geography out of them.

Before using this book, teachers should read the section in the Appendix which tells about making models. Children with imagination and manual dexterity revel in such work, and others also profit by it.

FRESH KNOWLEDGE

Even the best informed teachers wish to refresh the mind and *re-think* the material before teaching it again. For this reason successful teachers often consult books of reference before teaching again familiar material. Therefore, I have put in the Appendix references that may be of value to the teacher, and also references to books that may help the pupils. Pupils should be encouraged to read and consult *many* books. *Give them the research habit!*

If possible, have the geography class subscribe to the daily *New York Times*, no matter where your school is located. It has more foreign news than any other paper in America, and it will be a rare issue indeed that does not have news directly connected with the text of the book. Have the students read the foreign news and connect it with their geography work.

ARE YOU MAP-MINDED?

We are compelled by the machine age to have increasing relationships with foreign lands and peoples. The daily paper, radio, and cable put the citizen on a lonely Western farm in touch with Manchuria, Russia, Berlin, the Congo River. Have you a "mind map" of the location of places about which you hear? Do their names suggest a mental picture of the *kind of region* in which the news event occurred?

To help pupils to become *map-minded* and to give *meaning* to the mental maps, this book presents a new kind of map—a *human-use map*. On the political map (page 278) of Africa, you will find that the Congo River is in the Belgian Congo. On the physical map (pages 14-15) you will find that it is in a great plain. On the rainfall map (page 56) you will find that it is a land of heavy rain. On the human-use map

TO TEACHERS

(pages 280-281), you will find that it is in a great tropical forest. On pages 287-289 you will find the tropical forest described.

CITIZENS OF THE FUTURE

Machinery compels us to have more relations with other peoples than our grandfathers had. International activities and coöperations are forcing themselves upon us. We need to understand and sympathize with foreign peoples. The study of geography is the educational opportunity to attain this end, and I believe this book is particularly rich in such opportunities. For the problems of the nations, see the problem of better government in Persia (page 45); the Polish Corridor (page 189); the mixed peoples in Yugoslavia (page 176); immigration of Chinese into Indo-China (page 262); the problem of tropic diseases in the equatorial rain forest region of Africa (page 293).

SOMETHING NEW

In the last part — the part dealing with the United States in its world relations, this book presents a new feature in elementary geography. The concept of *world regions* is here presented in a more accurate way than has previously been done in elementary texts. On the climatic-regions map (pages 422-423) the climates of the world are separated into a number of types. The map shows the parts of the world in which each type is located. It enables us to see as never before what parts of the world are like the United States. This map will be a great aid in putting order and meaning into geography. This map is also a distinct stimulus to *geographic thinking*.

I predict an important future for the climatic-regions map in the study of geography on several levels. Climatic-regions maps have been in use in Europe for a long time. A map much like the one on pages 422-423 was published some thirty years ago by that first British geographer of his generation, the late and much lamented A. J. Herbertson.

ITS RELATION TO THE NEW GEOGRAPHY

In this volume climatic regions are not the basis of organization, but are a new tool useful in explaining the facts of geography. Explanation has become much more important since geography is recognized as a study of the *relationship* of man and the earth on which he lives.

ACKNOWLEDGMENTS

It is a pleasure to acknowledge the help I have received in preparing this book.

Mr. Otis P. Starkey, of the University of Pennsylvania, has helped with the geographic side of the human-use maps. The maps were drawn by Mr. Edwin J. Prittie.

Mr. George J. Miller of the Mankato State Teachers College, Mankato, Minnesota, and editor of the *Journal of Geography*, read critically the first draft of each chapter of the manuscript and made cogent suggestions of great value in the final revisions.

Miss Selma Abrams, formerly Supervisor of Teacher Training, New Orleans Normal School, now Principal, the Thomas Jefferson Public School, New Orleans; Dr. Helen Mackintosh, Supervisor Later Elementary Grades, Grand Rapids, Michigan; Mr. Ferris E. Lewis, Director of the Social Sciences, Fordson High School, Dearborn, Michigan; and Dr. Russell L. Packard, Head, Department of Geography, Concord State Teachers College, Athens, West Virginia, rendered valued assistance with questions, pupil-activity materials, and review exercises.

I have received many valuable suggestions from Miss Zoe Thralls, University of Pittsburgh; Miss Harriet Carter, Frick Training School, Pittsburgh; Miss Harriet Elliot, State Normal College, West Chester, Pa.; Miss Ella Hunting, State Normal School, Jersey City, New Jersey; Mrs. Alfred Harcourt, Riverside, Conn.; Miss Helen Piper, Elementary Supervisor, Lynn, Massachusetts; and from Mr. Frank A. Krutzke, my able secretary. Miss Margaret A. Hitch has critically read the manuscript for factual content.

Dr. Samuel Berman, Principal of the W. S. Pierce Public School, Philadelphia, has carefully checked the vocabulary for proper grading.

I wish also to acknowledge the constant counsel and help I have received, from beginning to end of this work, from Henrietta Stewart Smith, my wife, a skilled teacher of the young, and from Mr. William B. Nichols, of the editorial staff of The John C. Winston Company.

J. RUSSELL SMITH

Columbia University
New York City

CONTENTS

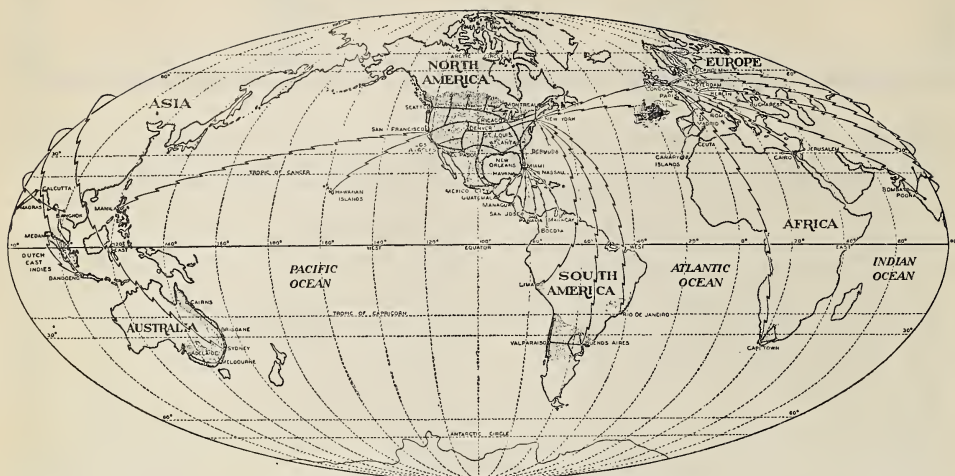
| | PAGE | | PAGE |
|--|------|---|------|
| EUROPE AND NEIGHBORING LANDS..... | 1 | Belgium..... | 149 |
| THE TENT PEOPLE IN AN OLD, OLD HOME OF THE HUMAN RACE..... | 1 | Luxembourg..... | 150 |
| The Kirghiz of the Flat Grasslands..... | 1 | FIVE THRIFTY SMALL NATIONS..... | 151 |
| The Kirghiz of the Mountains, Other Nomads, and a Great Idea..... | 8 | Map Study..... | 151 |
| The Tribes Move to New Lands..... | 11 | The Flat Pair..... | 152 |
| THE GREAT DESERT AND ARABIA..... | 13 | <i>Holland or The Netherlands</i> | 152 |
| The Desert and the Desert's Edge..... | 13 | <i>Denmark</i> | 155 |
| The Nomad Arabs..... | 20 | The Three Countries That Are Mountainous..... | 158 |
| The People of the Small Oases..... | 23 | <i>Switzerland</i> | 158 |
| The Great Rivers and the Great Oases..... | 27 | <i>The Scandinavian Peninsula and Its Farms</i> | 162 |
| Iraq — Another Great Oasis..... | 32 | <i>The Other Industries of Norway and Sweden</i> | 164 |
| Government and Future..... | 36 | AUSTRIA AND CZECHOSLOVAKIA..... | 167 |
| PERSIA AND TURKEY — THE BETWEEN LANDS..... | 39 | Austria..... | 167 |
| Persian Grasslands and Cities..... | 39 | Czechoslovakia..... | 170 |
| The Mud Village and Trade..... | 42 | YUGOSLAVIA, ALBANIA, AND BULGARIA..... | 173 |
| Turkey..... | 46 | The Map and the Three Regions..... | 173 |
| THE MEDITERRANEAN COUNTRIES..... | 50 | Life in the Mountains..... | 175 |
| A Geographic Invitation to Become Civil- ized..... | 50 | Governments, Peoples, and Industries..... | 178 |
| The Mediterranean Climate and Some Med- iterranean Crops..... | 56 | Undeveloped Resources..... | 180 |
| Mountain Agriculture — Tree Crops on the Mountains..... | 59 | HUNGARY AND RUMANIA..... | 181 |
| Dry-Land Crops of Tree and Vine..... | 62 | Climate..... | 181 |
| Irrigated Plains and Sheltered Nooks..... | 65 | Hungary..... | 182 |
| Italy and the Po Valley..... | 68 | Rumania..... | 184 |
| Cities of Northern Italy and the Riviera..... | 70 | THE NEW COUNTRIES ON THE BALTIC..... | 187 |
| Other Parts of Italy..... | 73 | Western Neighbors of Russia..... | 187 |
| Italy's Problem and the Mediterranean Problem..... | 75 | Poland..... | 188 |
| Other Mediterranean Countries..... | 79 | Lithuania, Latvia, and Estonia..... | 192 |
| <i>Spain and Portugal</i> | 79 | Finland..... | 194 |
| <i>Greece</i> | 81 | The Two Great Problems..... | 197 |
| <i>Syria</i> | 83 | THE UNION OF SOCIALIST SOVIET REPUBLICS..... | 198 |
| <i>Palestine</i> | 84 | The Belts of Land..... | 198 |
| <i>North Africa — Tangier, Morocco, Algeria Tunisia, Libya</i> | 85 | Resources and Some Problems of U. S. S. R..... | 202 |
| PEOPLES AND CLIMATES OF NORTHWESTERN, CENTRAL, AND EASTERN EUROPE..... | 87 | The New Russia..... | 207 |
| ✓The Peoples..... | 87 | REVIEWING THE MAP OF EUROPE..... | 210 |
| The Climates..... | 91 | REVIEWING THE TRADE OF EUROPE..... | 211 |
| GREAT BRITAIN AND IRELAND..... | 97 | EASTERN AND SOUTHERN ASIA..... | 212 |
| The British Empire..... | 97 | CHINA..... | 212 |
| Britain before Machinery..... | 102 | The Chinese Farmer and the Famine..... | 212 |
| Britain in the Machine Age..... | 105 | A Large, Isolated Country..... | 218 |
| British Trade and Cities..... | 109 | Chinese Culture and Chinese Industry..... | 221 |
| Ireland..... | 114 | North China..... | 223 |
| GERMANY..... | 118 | The Yangtze Valley — Central China..... | 226 |
| The Beginnings of Germany..... | 118 | South China..... | 229 |
| The German Plain..... | 121 | Some of China's Problems..... | 231 |
| The German Highland and Its Routes..... | 123 | JAPAN..... | 234 |
| Education and Manufactures..... | 126 | A Country That Changes..... | 234 |
| German Coal and Iron Industries..... | 128 | An Overpopulated Country..... | 238 |
| Foreign Trade and Shipping..... | 130 | Japan's Great Problem — to Feed Her People..... | 242 |
| The New Germany..... | 131 | INDIA, CEYLON, BALUCHISTAN, AND AFGHAN- ISTAN..... | 245 |
| FRANCE, BELGIUM, AND LUXEMBOURG..... | 134 | Peoples and Cultures in India..... | 245 |
| An Agricultural Nation..... | 134 | Land and Climate, Village and Food..... | 248 |
| French Farms and Forests..... | 138 | The Regions of India and the Northern Highlands..... | 249 |
| French Manufactures..... | 142 | The Low Plain of the Indus and the Ganges..... | 251 |
| Coasts and Ports..... | 144 | The Indian Peninsula..... | 254 |
| Paris and Tourists..... | 145 | Trade and Problems of India and Ceylon..... | 256 |
| | | BURMA, SIAM, AND FRENCH INDO-CHINA..... | 259 |
| | | Three Countries That Are Much Alike..... | 259 |

CONTENTS

| PAGE | PAGE |
|--|------|
| THE MALAY PENINSULA, THE EAST INDIES, AND THE PHILIPPINE ISLANDS..... | 265 |
| Lands, Peoples, Kingdoms, and Colonies..... | 265 |
| Dutch and British Possessions..... | 268 |
| The Philippines..... | 275 |
| AFRICA SOUTH OF THE SAHARA..... | 279 |
| EXPLORING AFRICA..... | 279 |
| A Continent with Bands of Land..... | 279 |
| Early Explorations and Colonies..... | 285 |
| THE EQUATORIAL RAIN FOREST REGION..... | 287 |
| Life before the White Man Came..... | 287 |
| Life and Trade after the White Man Came..... | 290 |
| THE GRASSLANDS OF SUDAN AND ETHIOPIA (ABYSSINIA)..... | 295 |
| The Sudan..... | 295 |
| Independent Ethiopia (Abyssinia) and Her Eastern Neighbors..... | 298 |
| SOUTH AFRICA..... | 301 |
| The Four Peoples..... | 301 |
| Land and Climate..... | 303 |
| The Mines and the Dependencies..... | 307 |
| TROPIC PLATEAUS OF SOUTH-CENTRAL AND EAST-CENTRAL AFRICA..... | 311 |
| Land and Government..... | 311 |
| The Plateaus of South-Central Africa— Angola, the Rhodesias, Nyasaland, and Katanga..... | 314 |
| The Plateaus of East-Central Africa— Tanganyika, Kenya, and Uganda..... | 316 |
| THE EAST AFRICAN LOWLANDS, MADAGASCAR, AND THE FUTURE OF AFRICA..... | 320 |
| The East African Lowlands..... | 320 |
| Madagascar..... | 321 |
| The Future of Africa South of the Sahara..... | 322 |
| AUSTRALIA AND THE PACIFIC ISLANDS..... | 325 |
| The World's Lost Corner..... | 325 |
| Australia — a Strange Continent..... | 328 |
| An Australian Sheep Ranch..... | 331 |
| The Sheep Industry and the Trade in Wool and Mutton..... | 335 |
| The Cattle Industry and the Trade in Meat and Hides..... | 338 |
| Small Farms and the Dairy Business..... | 340 |
| Australian Wheat..... | 342 |
| Growing Fruit and Sugar Cane in Australia..... | 345 |
| Minerals, People, Cities, and Future..... | 349 |
| NEW ZEALAND AND THE PACIFIC ISLES..... | 353 |
| New Zealand..... | 353 |
| The Isles of the Pacific..... | 355 |
| SOUTH AMERICA..... | 361 |
| GENERAL VIEW..... | 361 |
| THE NORTHERN COUNTRIES OF SOUTH AMERICA..... | 370 |
| Going up the Magdalena River..... | 370 |
| Going up Through Coffee Slopes..... | 374 |
| The Third and Fourth Stories of Colombia..... | 376 |
| Colombia's Northern Highlands and Western Coast and Valleys..... | 378 |
| The Forests and Grasslands East of the Andes..... | 380 |
| The Northern Highlands of Venezuela and the Maracaibo Basin..... | 383 |
| The Guiana Coast Lands and the Guiana Highlands..... | 386 |
| THE EASTERN COUNTRIES OF SOUTH AMERICA..... | 388 |
| The Amazon Valley and Northern Brazil..... | 389 |
| The Coffee Region of Brazil..... | 392 |
| Southern and Eastern Brazil..... | 396 |
| The Campos, Brazil's Third Frontier..... | 398 |
| Argentina, Uruguay, and Paraguay..... | 399 |
| The Gentleman and the Job and Uruguay..... | 403 |
| The Paraná Valley, the Gran Chaco, and Paraguay — the Country up the River..... | 405 |
| The Argentine Northwest..... | 407 |
| The Falkland Islands and Patagonia — Lands of the Ripping Wind..... | 409 |
| WESTERN COUNTRIES OF SOUTH AMERICA..... | 410 |
| Southern and Central Chile..... | 410 |
| Northern Chile..... | 412 |
| Peru, Ecuador, and Bolivia — Things in Common and the Pacific Coast Plain..... | 414 |
| The Andean Plateau..... | 417 |
| The Montana..... | 420 |
| REVIEW OF SOUTH AMERICA..... | 420 |
| OUR NEW WORLD AND THE PLACE OF THE UNITED STATES IN IT..... | 421 |
| OUR NEW MACHINES AND OUR NEW NEIGH- BORS..... | 421 |
| HOW COUNTRIES HELP EACH OTHER..... | 430 |
| OUR BREAD SUPPLY — WHEAT AND OTHER SMALL GRAINS..... | 432 |
| Wheat..... | 432 |
| Barley, Rye, Oats, and Flaxseed..... | 435 |
| CORN..... | 436 |
| RICE AND THE BEAN FAMILY..... | 440 |
| Rice..... | 440 |
| Beans and the Bean Family..... | 441 |
| VEGETABLES..... | 443 |
| OUR FRUIT SUPPLY..... | 445 |
| SUGAR..... | 448 |
| NUTS..... | 452 |
| THE FISH SUPPLY..... | 454 |
| MEAT AND EGGS..... | 457 |
| DAIRY PRODUCTS — MILK, BUTTER, CHEESE..... | 463 |
| OUR RESOURCES FOR AGRICULTURE..... | 467 |
| OUR STOCK OF FOREST RESOURCES..... | 471 |
| OUR STOCK OF FUELS..... | 475 |
| Kinds of Fuel and Their Importance..... | 475 |
| Coal in the United States and Canada..... | 475 |
| Coal in Other Continents..... | 477 |
| OUR STOCK OF OTHER MINERALS..... | 480 |
| OUR STOCK OF FIBERS..... | 483 |
| OTHER RAW MATERIALS WE MUST BUY..... | 486 |
| THE MANUFACTURED GOODS WE MAKE..... | 489 |
| The Needs and Resources for Manufacturing..... | 489 |
| The Northeastern Coast Region..... | 491 |
| New York to Buffalo..... | 492 |
| The Great Lakes Manufacturing Region and Its Neighbors..... | 493 |
| Manufacturing Cities on and West of the Mississippi..... | 494 |
| The Manufactures of Our Southeastern States..... | 496 |

CONTENTS

| | PAGE |
|--|-----------|
| COMMERCE..... | 498 |
| Why We Buy and Where It Comes From.. | 498 |
| The Reasons for Trade..... | 498 |
| SOME NATIONS AND THEIR PLACE IN WORLD TRADE..... | 500 |
| THE FACTS AND FIGURES OF OUR FOREIGN TRADE..... | 505 |
| SOME TRADE PROBLEMS TO THINK ABOUT .. | 508 |
| MATHEMATICAL GEOGRAPHY..... | 509 |
| THE EARTH AS A PLANET..... | 509 |
| PHYSICAL AND POLITICAL MAPS | |
| ASIA AND EUROPE..... | 2 |
| AFRICA..... | 14-15 |
| MEDITERRANEAN LANDS..... | 52-53 |
| EUROPE..... | 88-89 |
| BRITISH ISLES..... | 101 |
| CENTRAL EUROPE..... | 116 |
| CENTRAL AND EASTERN ASIA..... | 214-215 |
| MALAYSIA..... | 264 |
| PHILIPPINE ISLANDS, HAWAIIAN ISLANDS, AND PUERTO RICO..... | 274 |
| AUSTRALIA AND NEW ZEALAND..... | 326-327 |
| SOUTH AMERICA..... | 362-363 |
| ALASKA..... | |
| UNITED STATES..... | Plate I |
| PHILIPPINE ISLANDS, HAWAIIAN ISLANDS, and PUERTO RICO..... | Plate III |
| POLITICAL MAPS | |
| ASIA..... | 3 |
| EUROPE..... | 92-93 |
| WORLD..... | 98-99 |
| EUROPE JUST BEFORE THE WORLD WAR..... | 117 |
| AFRICA..... | 278 |
| POLYNESIA..... | 324 |
| SOUTH AMERICA..... | 369 |
| HUMAN-USE MAPS | |
| EURASIA..... | 6-7 |
| AFRICA..... | 280-281 |
| SOUTH AMERICA..... | 366-367 |
| SPECIAL MAPS | |
| CLIMATIC REGIONS..... | 422-423 |
| WORLD TRADE..... | 502-503 |
| APPENDIX..... | A-1 |
| INDEX..... | A-13 |

Fig. A. Telephones within reach of *your* telephone.

| NUMBER OF COUNTRIES AND PLACES | CONTINENT | TOTAL TELEPHONES | NUMBER OF COUNTRIES AND PLACES | CONTINENT | TOTAL TELEPHONES |
|--------------------------------------|---|---------------------|--------------------------------------|--|---------------------|
| 6 | NORTH AMERICA: United States, Bahama Islands, Bermuda, Canada, Cuba, Mexico. | 18,500,000 | | | |
| 4 | CENTRAL AMERICA: Costa Rica, Guatemala, Nica- ragua, Panama and Canal Zone... | 15,000 | 3 | ASIA: India, Palestine, Siam..... | 15,000 |
| 7 | SOUTH AMERICA: Argentina, Brazil, Chile, Colombia, Peru, Uruguay, Venezuela..... | 560,000 | 4 | AFRICA: Canary Islands, Egypt, Spanish Morocco, Union of South Africa.. | 115,000 |
| 25 | EUROPE: Austria, Balearic Islands, Belgium, Czechoslovakia, Danzig, Denmark, Finland, France, Germany, Gibralt- ar, Great Britain, Holland, Hun- gary, Irish Free State, Italy, | | 4 | OCEANIA: Australia, Dutch East Indies, Hawaii, Philippines..... | 535,000 |
| | | | 53 | TOTAL..... | 30,000,000 |

or more than 92 per cent of the World Total

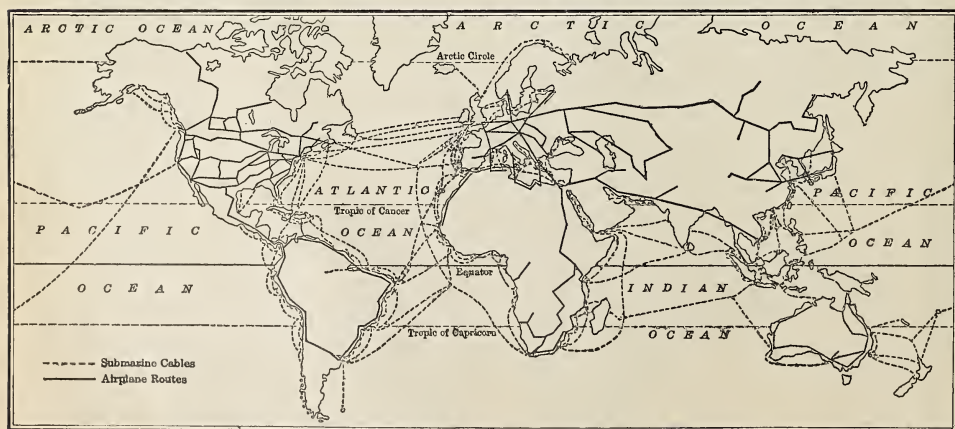


Fig. B. The chief ocean cables and air lines of the world.



Oree Photos

Fig. A. As you read the story, see how many things in the story you can find in the picture. Certainly you should notice the flat *steppe* land with scanty grass; the round-topped felt tents of the Kirghiz; the flock of sheep; and the Kirghiz milking the sheep.

EUROPE AND NEIGHBORING LANDS

THE TENT PEOPLE IN AN OLD, OLD HOME OF THE HUMAN RACE

Are you a nomad or a farmer? In many parts of the United States, by going only a short distance, you can find trees, gardens, orchards, and crops—growing things that are good for food. Suppose there was so little rain that you could find nothing but grass and a small bush here and there and that trees grew only along the rivers that came down from the mountains. What would you eat and how would you live in such a country? Keep this question in mind as you read this chapter.

THE KIRGHIZ OF THE FLAT GRASSLANDS

An Asiatic grassland. Suppose we wanted to visit a treeless land of scanty grass. Where should we go to find it? We can find land where only grass grows in most parts of the region between the Caspian Sea and the mountains far away to the eastward. Find this wide region on

the following maps: Figures 2-A, 3-A and 6-7-A. As we stand somewhere in the western part of this region and look to the east, we see land that is almost as flat as a floor. The land is flat also to the north and south and west—flat in all directions. We might walk for many days and always be walking on a flat plain. These treeless plains with scanty grass are called *steppes*. In the distance we see some small, round-topped objects. They are the tent homes of the people called *Kirghiz*, who live east of the northern part of the Caspian Sea.

Kirghiz hospitality. As we near the tents, some of the people come to meet us. They welcome us by taking us to a tent, the guest tent. It is to be our home while we stay. Next we are offered a bowl made of skin and filled with sour

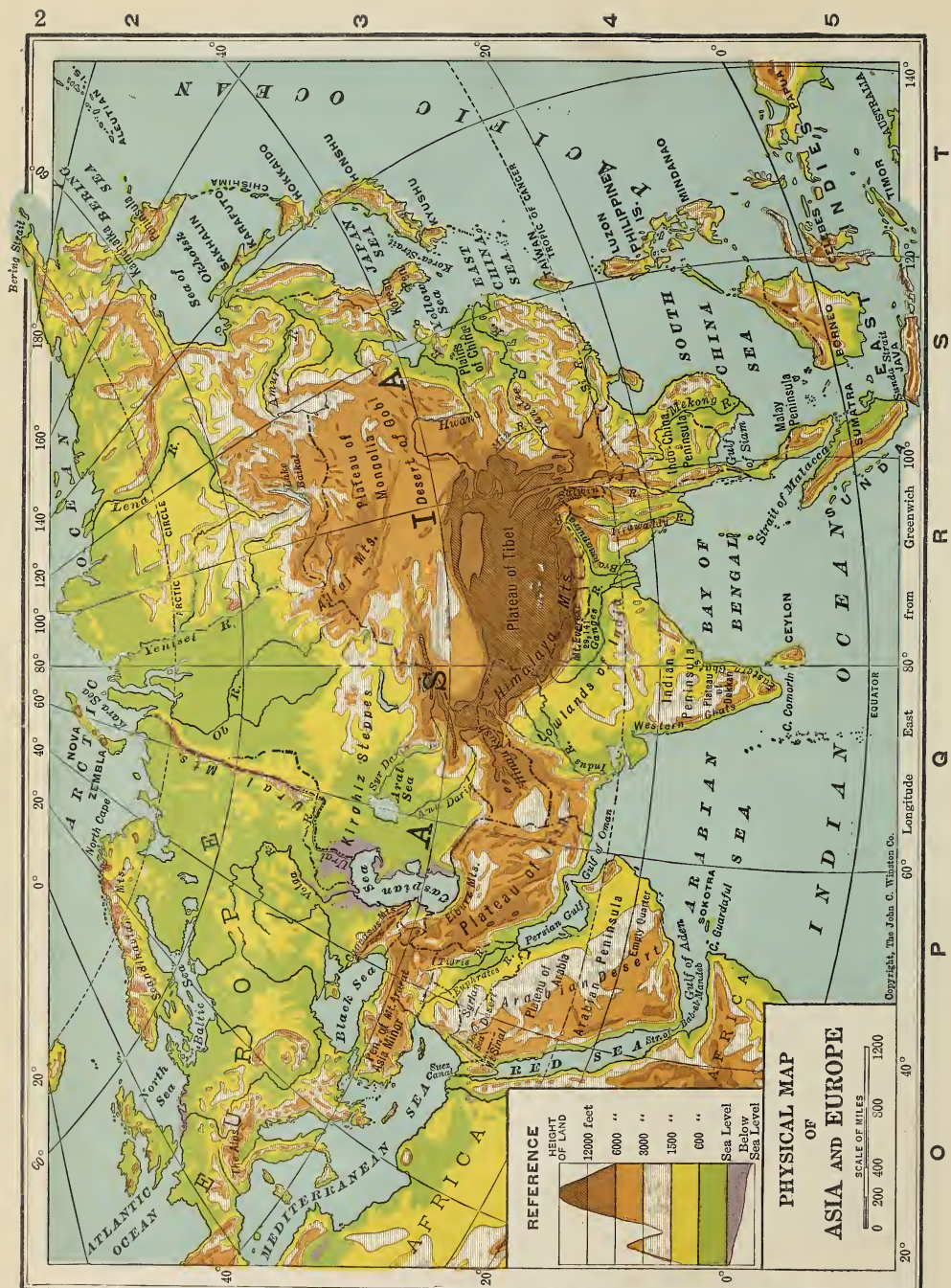


Fig. A



Fig. A. "As we look from our Kirghiz tent on a summer day, we see ——" (read the story and then tell what you see).

milk called *kumiss*. This is their most important article of food. It is refreshing and nourishing.

A Kirghiz boy runs behind one of the tents and kills a lamb. The lamb will be cooked for the feast that these hospitable people always prepare for guests.

Grassland food. The Kirghiz cannot grow many crops because there is too little rain; therefore they must get most of their living from grass. But people, you say, cannot eat the grass. Very true; but many animals eat grass, and the Kirghiz make their living with the aid of sheep, goats, horses, cattle, donkeys, and camels. The grass provides food for these animals and the animals provide the people with meat and milk, with wool, hair, skins, and hides. The people are clever and use these products in many interesting ways. They live almost entirely on meat, milk, cheese, and butter.

As we look from our Kirghiz guest tent on a summer day, we see two boys on the plain watching a flock of sheep. In another place we see a herd of two-humped camels nibbling grass.

Beside a tent, some women are milking

sheep. Sheep's milk is a very important food for the Kirghiz. While the lamb is being boiled for our feast, two women sit and spin wool into yarn. They spin with a little wooden tool which is not much bigger than a lead pencil. The women sit on their heels and spin yarn and wind it into balls. Near by, another woman uses a hand loom (Fig. 4-A) with which she weaves the yarn into warm, thick cloth. For ages the Kirghiz have clothed themselves with skins, leather, and homespun cloth of their own making.

At evening the boys bring the sheep in from the pasture. Men on horseback come to the tent carrying goatskins (Fig. 4-A) which they have filled with the water from a stream miles away. At the evening meal all gather around the pot of boiled lamb and everyone helps himself to all he wants.

After supper we sit around an open fire. Perhaps the old men tell stories of long ago, or stories about hunting or life on the distant mountains, or about horses and horse races. Instead of books, newspapers, radio, and movies, these people find amusement in stories. Then someone



Fig. A. In winter the Kirghiz plain is cold. What things in this picture tell you that the winter weather in Kirghiz land is cold?

sings a song. The others join in the song. Soon all lie down to sleep on blankets and sheepskins. They go to rest early because all will be up in the morning at dawn.

The grassland house. Kirghiz tents are of felt. This is a thick, warm cloth made of the hair of goats and camels. The felt is hung over a frame of poles. You must remember that no tall trees grow on the grasslands. To get the necessary poles, these people go to the forests on the high mountains or to streams where willows and poplars grow in moist soil by the water's edge. The floor of the tent is of earth and may be covered with felt or with rugs made of sheepskin or wool.

Moving day. The next morning our hosts move. They move many times each year to find grass for the flocks. In moving, everyone does his part and does it well. In a few minutes the tents are down and folded; the poles are tied together; milk pans, blankets, indeed all their belongings, are made into bundles. In a few more minutes everything they possess is on the backs of camels and

donkeys, and the people of the little settlement are moving across the plain, driving their flocks before them to the new place where there is better grass. Thus they live, from day to day, from week to week, from month to month, from year to year, camping and moving, moving and camping, generation after generation.

Winter on the Kirghiz plain is cold. The temperature is below freezing for weeks at a time and the wind blows fiercely across the steppes, but the snow is not deep. The people bundle up in great sheepskin coats, caps, and boots. To keep their hands warm, they have sleeves much longer than their arms. When not using their hands, they just let the warm, long sleeves drop down beyond the finger tips. This is warmer than any mittens.

The animals can dig through the snow and find grass on land that has not been grazed in summer, because it was reserved for the winter pasture.

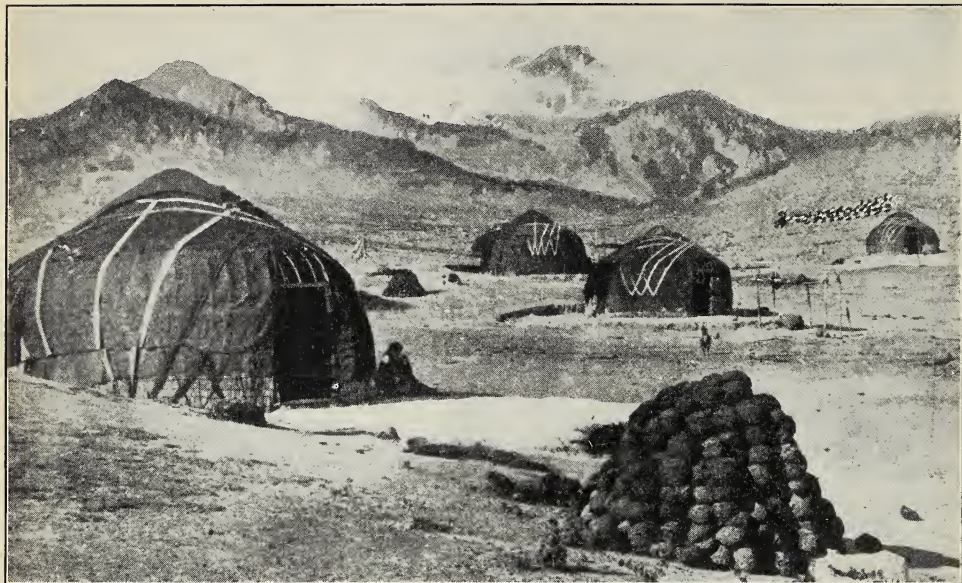
The Kazaks. The Kazaks are another tent people much like the Kirghiz. They live northwest of the Caspian Sea.



Fig. A. Eurasia as the home of man.



Fig. A. Eurasia as the home of man.



© Ewing Galloway

Fig. A. These Kirghiz live near the mountains of Central Asia. Off in the distance at the right you can see a nomad with his flock. After you have read the story, you should be able to tell where he will spend the summer and what work he will do.

THINGS TO THINK ABOUT AND TO DO

Your map pattern. In your geography work, you will find map patterns very useful. To make a pattern of Eurasia, lay a sheet of very thin white paper over Figure 2-A, and trace the borders of the continents. Paste the tracing on cardboard and cut along the continental borders. Use the pattern whenever you must draw an outline of Eurasia. Make patterns for the other continents as you come to them.

Begin a to-be-continued map. Sketch an outline map of Eurasia. Draw parallels, meridians, and the Caspian Sea. Color the regions of the Kirghiz and of the Cossacks.

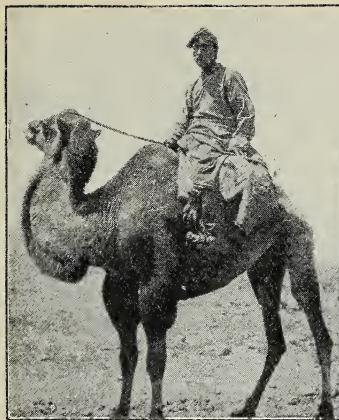
New words and expressions. Use each of the following words in a sentence about the grasslands: steppes, Kirghiz, two-humped camel, herd, hand loom, spinning, goatskins, open fire, willow poles, felt, summer pasture, winter pasture, warm sleeves, Cossacks.

Contrasts. A player from team 1 says, "My father works in an office," or "I eat vegetables every day," or "We read story books." A player from team 2 must reply by telling how a Kirghiz works, eats, and supplies his other needs.

THE KIRGHIZ OF THE MOUNTAINS, OTHER NOMADS, AND A GREAT IDEA

Summer in the mountains. Some Kirghiz live near the mountains which you see in Central Asia (Fig. 2-A). Some of these mountains are very high, like the Rocky Mountains. Like the Rocky Mountains, they have forests on their slopes, pastures above the forests, and snow and ice upon their summits. The Kirghiz who live here spend the winter in the valleys at the foot of the mountains. When summer comes and the snow begins to melt on the heights, they drive their flocks up into the mountains, very much as sheepmen do in the western part of the United States.

In May, the Kirghiz shepherd is on the lower slopes. In June, he goes higher. In July and August, he is far up, even at the foot of the melting snow. As the



Oroo Photos

Fig. A. The gentleman in the picture is a Mongol. He is a camel driver. He is riding on a two-humped camel.



Oroo Photos

Fig. B. Mongolian boys love to wrestle, as do boys in America and other parts of the world. While you are enjoying the wrestling, however, do not forget to notice the flat land on which these people live, the felt-covered tent which is their home, and the clothing of boys, men, and women.

nights get frosty, he comes down again from camp to camp, pasturing and driving his flocks back to spend the winter on the plains and in the valleys.

A great idea and a very old system. Central Asia is today the home of the wild donkey, the wild camel, the wild horse, and the wild sheep. It is believed that here men first learned to tame animals and breed them. No one knows when men first got this great new idea of raising tame animals, instead of having to hunt wild ones. Taming our animal helpers was one of the most useful things that man ever did for himself. Instead of being hunters, some men became herds-men, and began to follow their own flocks and herds back and forth across the plains and into the mountains of Central Asia.

Even today people are living in this old, old way over the very large area that extends from the Caspian Sea eastward to the Great Wall of China (page 220). Use the scale of miles on Figure 3-A and measure the length of this area. How far westward from New York would it reach? Here and there in this wide Asiatic grass-

land are places where you may find a patch of bare sand as large as a county in one of our states, or as large as the state of Delaware or Connecticut, or even Massachusetts.

Other grassland peoples of Central Asia. As you read on page 1, the tent people near the northern part of the Caspian Sea are called *Kirghiz*. Another race, living east of the southern part of the Caspian Sea, are called *Turcomans*. Those who live east of the mountains, in Mongolia, are called *Mongols*. These peoples are all nomads and live in much the same way as the Kirghiz live.

A party of travelers in these grasslands may pitch their tents by some watering place and in the morning wake to find that they are in the midst of a village, with several tents and hundreds of sheep, camels, horses, and donkeys. Again, the travelers may camp at evening near such a village, and wake in the morning to find themselves quite alone on the wide, level plain, the village having moved away in the night. Such settlements have no names. They say in Mongolia that such



© Underwood & Underwood

Fig. A. In Mongolia (Fig. 215-A [T-2]) you will find the town of Urga. This picture was taken near that town. The Mongols have gathered at a sort of county fair as their ancestors have done once each year for hundreds of years. At the fair will be wrestling, horse racing, and military exercises. Be sure to notice the tents and the mountains in the picture.



Fig. B. These women and the boy are Turcomans. The women are weaving a rug inside their tent. The boy is holding a rug so that you can see its design.

and such a group of people are by, or near, a certain well, or a certain stream. All wells, springs, and streams have names.

Towns of long ago. Travelers going through this wide country of the tent people will sometimes find an old irrigation ditch in the desert where there is now no water. Ruined cities have been found in places where there is no water. The

city must have had water for its people to drink and for the crops that fed the people. Therefore we know that long ago this land had more rain than it has now.

THINGS TO THINK ABOUT AND TO DO

Continue the map. Color the mountains beyond the steppes. Show the Great Wall. Write the letters *T*, *K*, *M* several times where the three steppe peoples live.

Are the steppes big? From an outline world map cut or trace the outlines of the United States. Lay this cut-out over the steppes. How big is the home of the Kirghiz?

Thought questions. 1. Why do not the steppe peoples live in one place as we do?

2. Why were there once farms and cities in some places on the steppes?

3. What happened to these old cities?

4. What happened when wandering tribes tamed wild animals?

Contrasts. Tell how the Kirghiz of the mountains and those of the steppes are alike and how they differ.

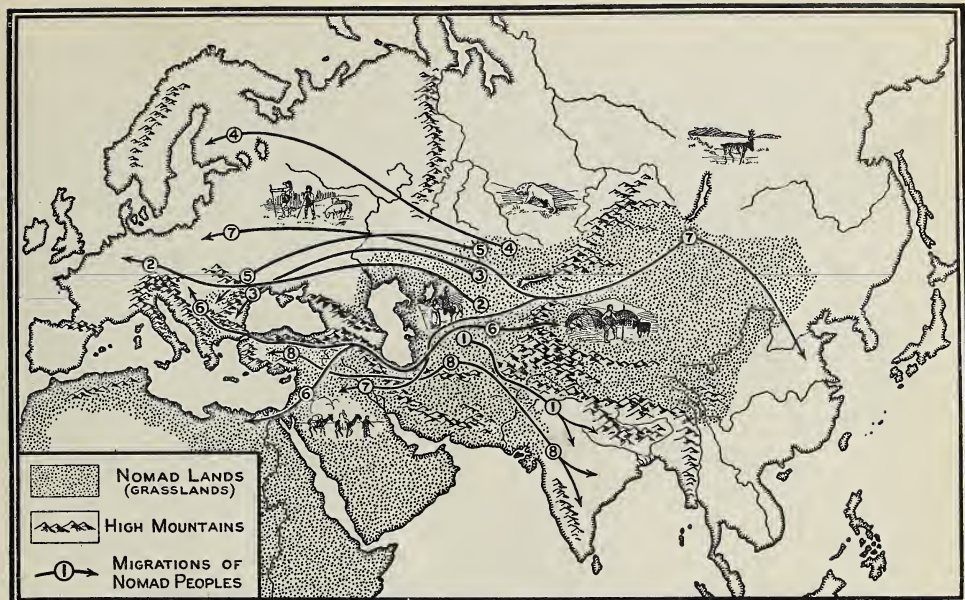


Fig. A. On this map have been drawn the routes taken by a few of the great migrations. You will be interested in tracing each migration from the district in Central Asia where it started to the place where it ended.

THE TRIBES MOVE TO NEW LANDS

Many nomads move to other lands. Many times have these flock followers from Central Asia gone out to other lands. Accustomed as they were to changing their location every week or two, they could easily move forward instead of back and forth. To go to another country did not change their manner of living, if they could find grass and water. Some of the groups went eastward into China (page 220); some went southward, across the mountains into India; some went southwestward, across the mountains into Asia Minor. The Turks, who now live in the country called Turkey, were once Turcomans, like their cousins who still follow flocks back and forth east of the southern part of the Caspian Sea. Many bands of steppe people have moved eastward into China, southward into India, and westward into Europe.

Indeed, many people who have studied this question very carefully think that most of the peoples of Europe came from Asia, driving their flocks before them. What does Figure 11-A tell you about this? Several times in this book we shall be studying about the descendants of the peoples who moved out of Central Asia. We shall call these movements of groups of peoples, the *great migrations*.

The great migrations changed the color of the people of India. Group after group of light-skinned people from Central Asia went to India, settled, and some of them mixed with the dark-skinned people who were there before them. The Kirghiz and the Mongols are nearly white, as were some people from Afghanistan whom I met in the Khyber Pass, between Peshawar, India, and Kabul, Afghanistan (Fig. 246-A). They are much like the people of northwestern India, who are, indeed, their cousins. Some of the people of *southern*

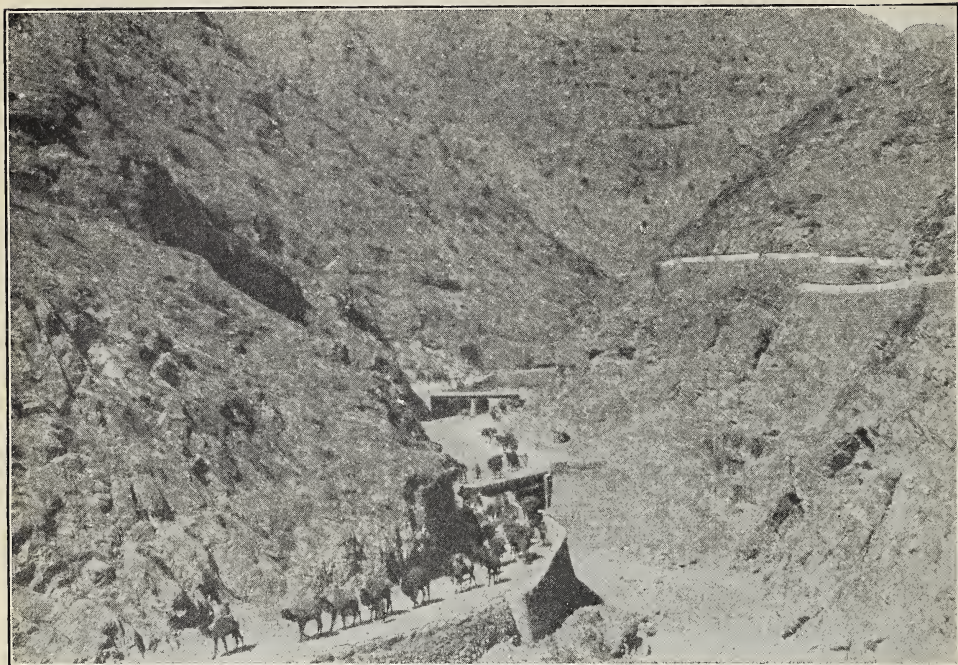


Photo J. Russell Smith

Fig. A. A camel train passing through the famous Khyber Pass. Turn to Figure 3-A and find two countries: Afghanistan and India [Q-3]. Turn to Figure 2-A and notice the mountains in Afghanistan. The pass is the only route through these mountains for migrating peoples, armies, or camel trains.

India are almost as black as a black shoe (Fig. 246-B). Between these two opposite ends of India, the color of the people shows all shades from black to white.

THINGS TO THINK ABOUT AND TO DO

Continue your map. Show by dark lines how the great migrations took place from the steppes: east, south through the Khyber Pass, southwest, and west. Write the names of the nomads' new homes.

Are you a nomad? Are you a nomad if you go to the country every summer? to and from school every day? if you move from one rented house to another? if you go to New York every spring to buy goods for your store? if you lead your cows to pasture every morning? Give reasons.

New words and expressions. Use each of the following words in a sentence. List the sentences together into a paragraph about the nomads: nomads, migrated, flock following, descendants of nomads, great migrations.

CHAPTER SUMMARY

A soap-box or cigar-box stage. The girls may dress Kirghiz clothespin dolls. The boys may make tents. Your class artist may color on paper a steppes background, to use like curtain drops on a stage. Your stage will need many cardboard animals. Visitors would like to hear your explanation of the scene setting.

1. Perhaps you would like to set the stage for "A Bazaar," or "Travel by Caravan,"

2. Perhaps you would like to make your clothespin dolls talk.

3. Make a speech that might be made by each of the nomad's animal helpers.

Giving reasons. Complete the following: Kirghiz eat mostly meat and milk because

Let everyone in the class make incomplete sentences like these about the different customs of the steppe peoples. Change papers and see if your classmates can complete the sentences.



© Wide World Photos

Fig. A. A camel corps at the edge of the Great Desert. The officer is on horseback, but his soldiers, who must police this part of the desert and its edges, find camels much more useful. Why? What time of day was this picture taken? How can you tell. How would you describe the ground over which the camel corps is passing in review?

THE GREAT DESERT AND ARABIA

MORE LANDS OF TENT DWELLERS

As you read this chapter, look now and then at Figures 56-A and 57-A. Try to decide why so few people live in most of North Africa and Arabia and why so many people live in some parts of these lands.

THE DESERT AND THE DESERT'S EDGE

The Great Desert — its size. The Kirghiz, the Turcomans, and the Mongols are not the only people who live in tents. Europe and the countries on the eastern and southern shores of the Mediterranean are almost ringed around by a great band of tent land. To find this land on the physical map (Fig. 14-A), begin by finding the mountains in northern Africa. What is south of these mountains (Figs. 6-A and 280-A)? We call this vast region the *Sahara*. The Arabs who live there speak of it as the *Great Desert*. How many are the degrees of longitude across the widest part of the Sahara? across the widest part of the United States? This desert

region extends eastward beyond Africa. In Asia it includes the deserts of Arabia, Palestine, Syria, and Iraq. These deserts of Africa and Asia are really two parts of the great desert region. The two parts are separated only by a narrow sea whose shores are mostly desert. How far from Cairo is Basra? is Aden? What is the distance from New York to Chicago?

The Great Desert — its surface. This desert does not have a sharp edge, like that of a field or a road. We might say that its edge or boundary is a climate boundary, where the rainfall gradually increases and the desert gradually changes into a land of bunch grass and bushes.

The desert is not everywhere the same. A traveler crossing it on his camel might at one time ride for miles across bare rocks from which the hot wind had swept every grain of sand as fast as the surface of the rocks crumbled into sand. In other parts of the desert he might travel

M N O P Q R S T U

14

1

2

3

4

5

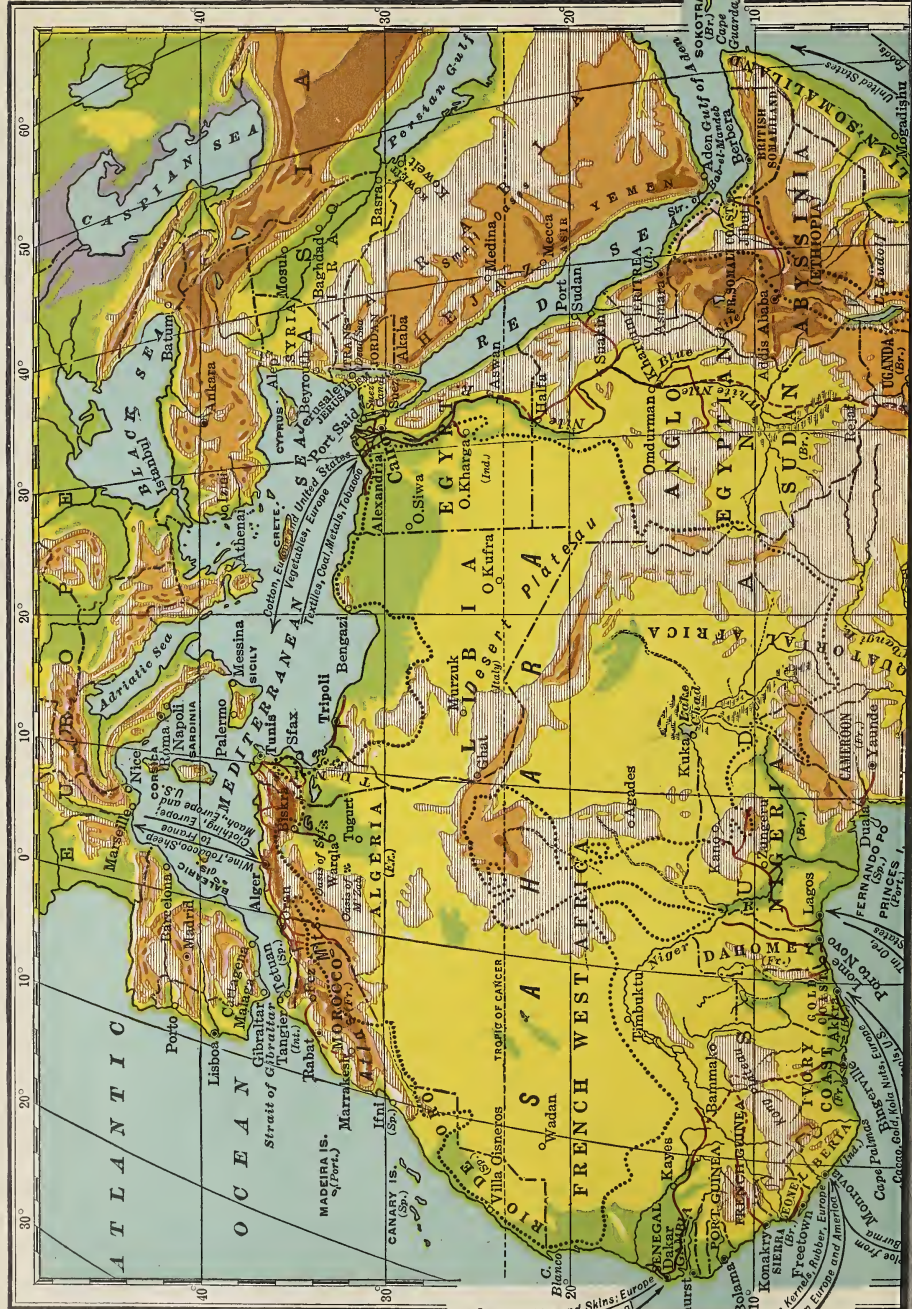
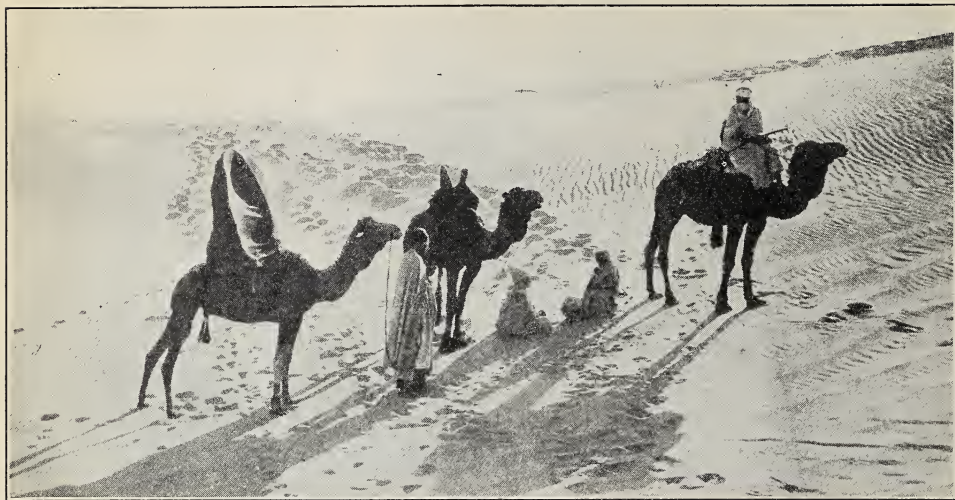


Fig. A

← Peanuts, Hides and Skins; Europe
Cottons, Foodstuffs, Metals, Coal
Palm Oil, Palm Kernels, Rubber, Enamels
Cottons from Europe and America



© Ewing Galloway

Fig. A. Parts of the Great Desert are covered with shifting sands over which the "ship of the desert" travels. Look at his footprints and tell why the camel can walk easily over the yielding sand.

for many miles across heaps of sand called *dunes*, which are always drifting, drifting with the wind. In some places there is a little grass between the dunes. Rain sometimes falls in most of the desert, but there are often long intervals between showers. In some places, where there is a little moisture, tufts of coarse grass and clumps of thorny bushes grow. Later we shall read about the oases that are found in this desert (pages 23 and 27).

Trade winds and the Sahara. Why is it that Europe is green with crops and forests, while to the south, in Africa, thousands of square miles are brown and almost bare? The answer is—the wind. You doubtless remember that the trade wind blows from the northeast across the Hawaiian Islands and the East Indian Islands, and that it gives to those islands a wet side and a dry side. In Africa the northeast trade wind blows across lowland all the way from the Red Sea to the Atlantic, and becomes hotter and hotter as it goes toward the Equator. This hot wind dries the moisture from the land

instead of giving moisture to it. Thus the trade wind makes the Sahara a desert.

Summer weather in the desert. The sun makes the dry ground very hot. The air above it becomes so hot that it quivers like the air over a hot stove. Then the desert Arab wraps thick layers of wool around his head to keep out the heat. Often he wears a long, flowing robe, or *burnoose*, made of pure wool. At night he needs this woolen garment for warmth. The temperature is often 120° or 130° F., or even more, in the sun during the day, but there may be frost at night. This happens because the sand cools very quickly and heat escapes through the dry air. In rainy places moisture in the air and clouds keeps the earth warm at night very much as our clothes keep us warm. Summer traveling in the desert is often done at night, if the traveler does not need to rush on with all speed to reach some distant spring.

Winter. The winter wind of these deserts is sometimes a cutting, cold wind, but not nearly so cold as that in Central



© Underwood & Underwood

Fig. A. This picture also was taken in the Great Desert. Compare with Figure 16-A. Why the difference? The answer is *water*. Underground water bubbling from springs helps the date palms and other plants to grow and make an *oasis*. The caravan which is just arriving at the oasis is exploring the part of the desert.

Asia. Snow is unknown in most places, and animals can eat dried grass and evergreen bushes if there are any left. The Arab tent is made of goat's hair. It is lighter and not so warm as the Kirghiz tent, whose walls are of thick felt.

Rainstorms and dust storms. In winter, a few inches of rain falls in northern Arabia, northern Egypt, and the northern edge of the Sahara. No part of the Sahara is entirely rainless, but in some places a dozen years may pass between showers. Thunderclouds sometimes form and rain may fall violently. More often, however, a traveler sees rain falling through the air, but only to evaporate before it reaches the ground.

The desert also has windstorms which gather clouds of sand and dust, and drop them in burning-hot, stifling showers. People and animals are sometimes smothered to death in sand storms.

Watercourses and lakes in the desert. It seems strange to think of watercourses in a desert, but many are found there. On

the southern slope of the Atlas Mountains, in some of the highlands in central Sahara, and in central Arabia, there are many large springs that flow all the time. At the time of the winter rains, streams flow for miles and then sink into the desert sands. Some of these streams flow every year; others flow but seldom. The watercourse that passes through the oasis of M'zab, in Algeria (Fig. 14-A) has flowed only twelve times in one hundred fifty years. These old, dry watercourses are often the best roads there are, and they may be used in safety for years and years. Then, suddenly, a cloudburst pours down several inches of rain in a few minutes; water rushes down this old course with the speed of the wind, picking up dust and sand as it runs. The flood may bury men and animals as you would bury ants with a bucket of muddy water.

H. St. John B. Philby, a traveler in central Arabia, speaking of a certain watercourse, or *wadi*, says: "Never within the memory of man had the wadi been

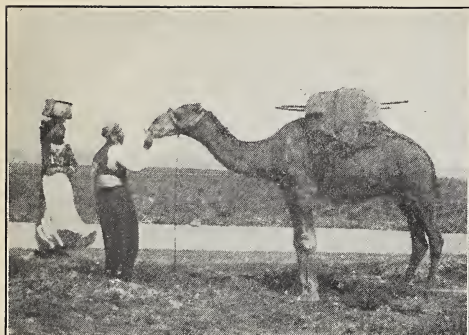


Photo J. Russell Smith

Fig. A. The camel driver has cut a few thistles by the side of the desert road so that his camel may have a quick lunch.



Photo J. Russell Smith

Fig. B. The woman and baby in the picture are Bedouins. They are returning to their tent in the desert from a trip to Baghdad (Fig. 3-A [P-3]).

known to flow. But, during the summer of 1917, a flood of exceptional force descending from the mountains burst through a barrier of sand dunes that had filled the old channel, and flowed down the long-dry wadi. The governor was seated in the audience chamber drinking coffee with his guests when news of the flood was brought in. 'Bring me a cup and let me drink up this flood,' said he jokingly, thinking there was no flood.

"That evening the first trickle of water reached Faraa, and for seven days a broad, swirling river flowed through the oasis, reaching a point some miles below its eastern end. For several months there-

after a deep and gradually evaporating lake stood where water had never been seen before. The havoc wrought by this flood was terrible. It completely wrecked many wells and destroyed 150 human lives, 450 camels, and thousands of sheep."

Desert springs. Springs are sometimes found in deserts where there is a crack or a break in the rock beneath the earth. Here the water, coming from some distant mountain source, finds a chance to reach the surface. Along the foot of the Atlas and other mountains, or even far out in the desert (Fig. 17-A), springs are found. From one spring to the next — sometimes a distance of several days' journey — the caravans travel across the wide, white, glaring sand, hot stones, or bare clay. The springs are the stations on their route. The caravan leader must measure his march carefully; for, although the caravan is on the move perhaps sixteen hours a day, it may cover but thirty wearisome miles. His problem is to reach a spring by the time that he and the animals must have water.

Desert plants. Everything that lives in the desert must learn to get along with little water. The plants have deep roots which reach far down for water, and small leaves which do not give off much moisture. Some plants grow very quickly when it rains, and then make seed and die. Others sleep through the drought and at the next rain spring into life, bloom in a few days, ripen another crop of seed, and go to sleep again.

There are only a few kinds of plants which can grow in the desert, and some of these have a bitter taste; others are so poisonous that no animal will eat them; many are so thickly covered with thorns instead of leaves that no animal can eat them.

Desert animals. The animals are also

strangely fitted by Nature to get along in such a place. The camel is a kind of living storehouse. When he has a chance to get food and drink, he can add a hundred pounds of fat to his hump in a short time. Then, for days at a time, he can, if he must, walk across the burning sands and neither eat nor drink. Each day, pounds of fat stored in his hump go into his blood and take the place of food. The lips of the camel are padded with coarse, thick hairs that lie flat. This enables him to eat thorny bushes. To avoid dust, he can shut his nostrils as we shut our mouths. His eye has a double lid, one of which is transparent, so that he can see through it even in sand storms. Instead of a hard, sharp hoof, his foot is a wide cushion that spreads out on the sand.

The desert sheep, like the camel, stores fat. Instead of having a hump, one breed of sheep has fat on its back near the hips; other breeds have broad, thick tails of various shapes that often weigh half as much as the rest of the sheep (Fig. 19-A).

The donkey, or ass, and the goat are natives of deserts. The donkey can get along with less food and coarser food than the horse. We make jokes about the goat because he can use so many rough, coarse things for food. Throughout the desert region are wild antelopes and wild gazelles. They do not need to store much food on their bodies, because they can run for long distances with astonishing speed. Thus they escape their enemies and find food and water.

THINGS TO THINK ABOUT AND TO DO

A To-Be-Continued map of the Great Desert. Each pupil may make a small map for his notebook, or the class may make a big map on wrapping paper for the bulletin board. Color the Great Desert. Draw the parallels and meridians that cross it. Write initials or names for the following: Sahara, Arabia, Palestine, Syria,



Photo J. Russell Smith

Fig. A. Here are some of the fat-tailed sheep which you read about in this story.

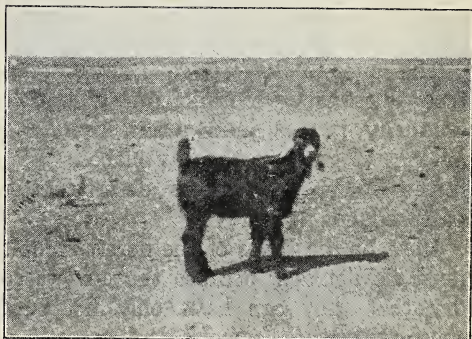


Photo J. Russell Smith

Fig. B. The kid stopped for a moment to look at the camera and I snapped him. He lived, at the time this picture was taken, on the dry lands of Iraq.

Iraq, Cairo, Basra, Algeria, Atlas Mountains, Red Sea.

Word pictures. 1. How long a list of words and expressions can you write after the words "Great Desert" to describe it? Here is a start: burning sand, hot winds,....
2. Do the same for desert plants.
3. Do the same for desert animals.

New expressions. Use each of the following expressions in sentences about the Great Desert: wadi, burnoose, caravan stations, trade-wind desert, drifting dunes, watercourses, cloudbursts, springs, rocks crumble, dust storms, air quivers.



© Publishers' Photo Service

Fig. A. A family of Bedouins at the edge of the desert. Tell something about the tent in which they live. Why do they have camels? How can you tell from the picture that the weather is very dry?

THE NOMAD ARABS

The nomads of the Great Desert. The true desert where nothing grows changes gradually into a land where there are patches of grass in the low places. Still farther from the lifeless desert, better pasture lands appear.

Here, on the edges of the desert, people must be nomads, because the land is so dry that they can have only flocks of sheep and goats, camels, donkeys, and a few horses. To get water and food for their animals, they must drive them from place to place. Many small tribes live by this means. They also buy things here and there which they carry across the desert to sell. For ages nomads have carried Negro slaves across the Sahara, just as the band of Midianites took the shepherd boy, Joseph, down to Egypt more than three thousand years ago, and sold him to the Egyptians.

Winter home and summer home. Like the nomads of central Asia, many of the Arab nomads, called *Bedouins*, have a

winter pasture area and a summer pasture area. At the end of the winter rains, there are places, far out in the Sahara, where pools of water stand and springs run for a few weeks, and grass springs up. Many tribes that spend the summer in the Atlas Mountains go for the winter and spring season to find grass on the edges of the Sahara. Each season they make a journey of many days to the southward, pasturing and camping as they go, and pasturing and camping as they return.

Syria and northern Arabia. Many nomads who spend a part of the winter and spring in the desert between Palestine and the Euphrates River, go down to the Euphrates when the heat of summer dries up the desert. They spend the summer months with their flocks in the moister lands along the great river. But the seasons they like best are winter and spring, when they move and camp far away from any but their own little tribe. The worst thing the Bedouin can think of is living in a town and having to obey a government.

Arabia's empty quarter. This moving into the desert and out again allows people to live for a part of the year in places where they could not possibly live all of the year. Some people of southern Arabia have one of the most remarkable of all these in-and-out movements. At the end of the rainy season, the nomads along the south end of the central highland of Arabia often make a trip into the part of southeastern Arabia which the Arabs call *the Empty Quarter* because it is entirely uninhabited for most of the year. The water of the springs here is so salty that men cannot drink it, but camels can. The camels after pasturing, must return to the springs to drink; so the people camp by the springs and milk the camels when they return for water. Camel's milk, dates which the nomads bring with them, the flesh of gazelles, and other game furnish food and drink for the desert camp.

At times these people cross the eight hundred miles of the Empty Quarter to raid the tribes near the shores of the Red Sea, but, so far as we know, no white man has gone with them. But white men have at last crossed the land. Bertram Thomas crossed it in three months — from October, 1930, to January, 1931. In 1932 H. St. John B. Philby crossed it. Each has written a book about his journey.

What does a Bedouin own? The desert nomads, or Bedouins, have a hard life in seasons of little rain. If springs dry up and pastures fail, the flocks starve. Then the nomads must either starve or rob; so they rob. In speaking of this custom, an Arab chief once said: "It has been a part of the customs and nature of the Arabs from the earliest time to make war upon one another as well as upon neighboring nations. The poor Arab needs a horse so that he can ride to fall upon the goods



Photo J. Russell Smith

Fig. A. A Bedouin riding into Baghdad from his desert camp six miles outside the city. See the flat dry land over which he is riding. Why does he cover his head, neck, and shoulders?

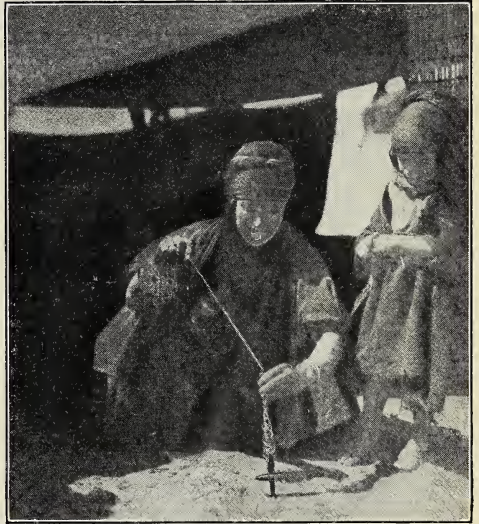
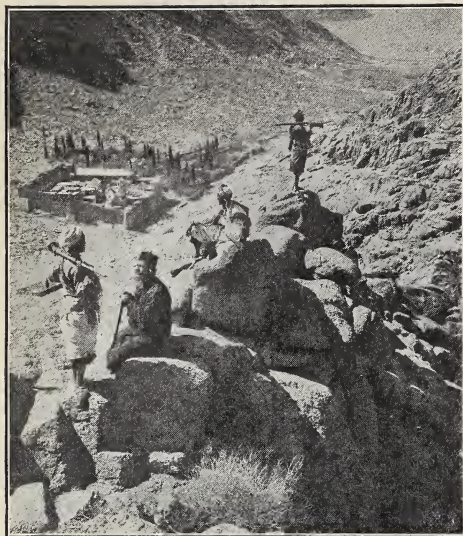


Photo J. Russell Smith

Fig. B. A Bedouin woman spinning wool into thread at the door of her tent, while her little daughter watches in order to learn how to spin.

of his enemy, take possession of them, and grow rich; and the rich Arab likewise needs a horse to protect his fortune and his head." Since the Arab depends so much upon his horse, he has bred a kind of horse that shows more endurance than any other breed in the world.

Why should the nomad's property be only flocks that can walk and bundles



© Underwood & Underwood

Fig. A. The monastery which you see in the picture is over 1000 years old. It is near Mount Sinai (Fig. 2-A [O-3]). A spring which gushes from the base of the mountain provides water for the monastery and for the olive trees which are said to be older than the monastery. Why do the guards keep watch?

that can be carried on beasts? No desert nomad owns a piece of land. Why should he? Where he wants to pitch his tent, there he pitches it. When he wants to move, he goes. Grass and water are the two things worth having, and he must move to get them.

It is easy for the Bedouins to become *caravaneers*; that is, leaders of caravans. It is also easy for them to drive their flocks to some town on the edge of the desert and sell them. Much of the meat eaten in Egypt and Iraq is the flesh of sheep and camels sold by the Bedouins.

Raids and signal fires. To be safe from robbers, the Berbers, who live in the Atlas Mountains and have barley fields and olive trees, built their towns upon the tops of hills, where defense is easy. In southern Tunis, I have seen lookouts posted on high rocks overlooking the villages in the valley below. There, these

hill Berbers for generation after generation have stood watch night and day, for weeks and months at a time. The watcher had coals of fire and kindling at hand ready to start a signal fire. At the first sight of the enemy, the fire would be lighted. The watchman on a distant hill would see the fire signal and light his fire to signal the next lonely watcher. Thus the news of danger would be passed between villages almost as quickly as by telephone. Even a city like Sfax on the coast of Tunisia still has a solid stone wall higher than the houses. All the people were living inside this wall when the French took possession in 1881.

The great migration from Arabia. Most of the people of Arabia and of the Sahara and the lower valley of the Euphrates are Arabs. This is true because here, too, have been great migrations. In A. D. 570 there was born in Arabia a man named Mohammed, who was a great leader of men. He founded the Mohammedan religion and led bands of Arabs out to conquer other lands and to force the people to accept the Mohammedan religion. Mohammed and his followers spread the Arab race entirely across northern Africa. For a time, Arabs even lived in Spain, and today the Arab speech is used from the Atlantic Ocean to the Red Sea; from the Red Sea to the Persian Gulf, and even to the foot of the mountains of Asia Minor.

Raids. Palestine (Fig. 53-A) is so close to the desert that hungry nomads have often ridden across the Jordan and raided the farms and villages. Jerusalem still has a wall (Fig. 84-B). The little town of Bethlehem has been raided so often that the big arched doorway of a Christian church was walled up for defense so that only a small opening remains.

Camp-fire tales. The Bedouins can



Photo J. Russell Smith

Fig. A. At the edge of the desert where there is some pasture the Bedouins have flocks of sheep. One of the women in the picture is milking a sheep.

rarely read — they could not conveniently carry books — but they have good memories and know many stories, which they tell around the campfire. Thus they preserve from century to century the ancient stories of their race.

THINGS TO THINK ABOUT AND TO DO

Add to your map. Add the Euphrates River, Empty Quarter, Highland of Arabia, Spain, Atlantic Ocean, Persian Gulf, Asia Minor, Tunisia, Sfax, Jordan River, Jerusalem.

Animal talk. Play that a camel who lives on the Great Desert can talk. What would he say about his life in the desert? Play the same about other desert animals.

Two-minute talks. Pretend that you are a Bedouin. Talk to the class for two minutes about your food; travels; clothes; property; work; dangers; enemies.

Give reasons. 1. Why Bedouins rob.

2. Why they are feared by Berbers.

3. Why they like winter and spring.

4. Why they cannot raise cows.

5. Why they travel into the desert in the winter and spring.

6. Why they own no property but flocks.

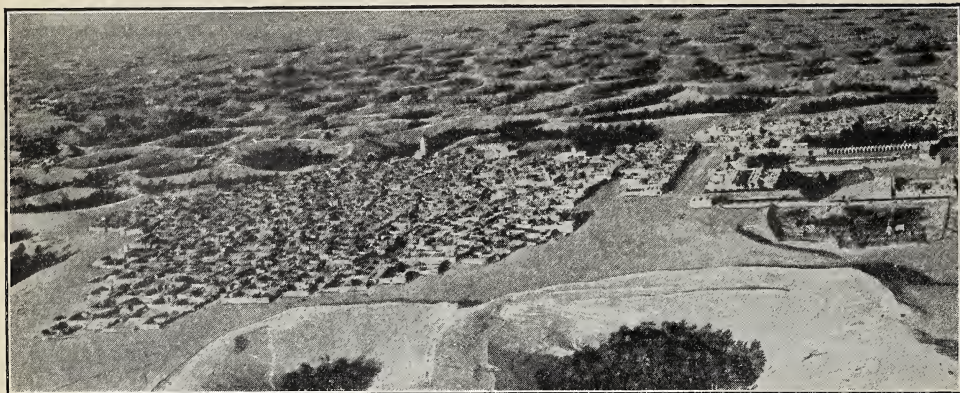
7. Why they value their horses.

8. Why Berbers have fixed homes.

THE PEOPLE OF THE SMALL OASES

The sand oasis of Suf. In the northern Sahara in Algeria, a traveler may go from one oasis across nearly sixty miles of waterless, wavelike sand dunes to the next oasis called *Suf*. After many hours on the back of a camel, the traveler beholds on the white sand a dark green spot. As he comes nearer, the green spot proves to be the tops of palm trees. There is no spring or stream in Suf, but, long ago, growing plants showed the Arabs that there was moisture beneath the sand. Because of this discovery, the place gradually became the home of thousands of people. Because date-palm trees can send their roots through many feet of moist earth to reach water in the ground beneath, date gardens can be made to flourish in some places where there are no surface springs or streams. Date trees are capable of supporting many people, as we shall soon see.

When a palm garden is to be planted in



© Underwood & Underwood

Fig A. An airplane picture of El Oued, an oasis town at the edge of the desert in Algeria (Fig. 14-A [P-2]). The dark patches are groves of olive trees. The circular piles about the trees are sand. To keep the wind-blown sand from covering the palm trees, the people carry it away in baskets and heap it up in these circular piles.

Suf, the people dig a wide pit eight or ten feet in depth. In this pit the trees are planted. Because the sand dunes move before the wind, sand would soon bury the palm trees if the people did not prevent it. This they do by building fences of palm leaves which keep off some of the drifting sand. Even then they must carry much sand out to the desert in baskets. Each season the wind blows some of it back, and so, from childhood to old age, the Sufas are tugging baskets of sand out of their little date gardens and piling it on the surrounding sand hills.

The people of the Suf live in stone houses beside their palm gardens. Camels, goats, and sheep can find a scanty living in the damp places between the dunes; therefore the people have wool and milk. Why are they not nomads?

The eyes of these people are trained in a most astonishing way. If a man of the Suf wants to get his camel, he will go to the place where he last saw it and follow its pad tracks. He knows the track of his own camel from that of his neighbor's camel. We might not see the difference between a camel's track and that of a horse.

Oases with wells. In another part of the desert west of the Suf, most of the surface is bare rock in which water from occasional rains has cut a network of channels. This region has been given the name of M'zab, meaning in Arabic, "the net." The valleys are full of sand. Beneath the sand there is water, though it is too far below the surface for even the roots of the palm trees to reach it. But the Arabs do not let water escape. They bring it up from deep in the earth and use it to irrigate the land. The water is drawn up in a big leather bucket fastened to the end of a rope. The rope passes over a pulley at the top of the well and is fastened to a donkey or a camel (Fig. 25-B). As the beast walks away from the well, he draws the leather bucket, full of water, up to the top; the water is dumped into a carefully lined ditch or channel, through which it flows to the crops.

If a well yields water all the time, the privilege of using it is sold, and all day and all night one can hear the creaking of the pulley, the yells of the drivers, the thump of the beast's feet, and the splash



Photo J. Russell Smith

Fig. A. The entrance to an oasis in Tunisia. Here you see date palms, a fig tree at the right, and the stream that makes the oasis. The water is flowing across a log with notches in it. A man counts his fortune by the width and depth of his notch in the water-measuring log. Why is the house built outside the oasis?

of the water as it falls from the bucket. The labor is hard, but the M'zabites, like the Soufas and the nomads of the scanty pastures, are big, strong men. Thousands of M'zabites live in this place, because here they can raise the hidden waters of the earth in leather buckets.

Oases with springs and small streams. In most of the many hundreds of small oases of the Great Desert, it is not so hard to make a living as it is at Souf and M'zab. In most of the other oases water comes from flowing streams. The people turn the water into their gardens, thus giving the date tree what the Arabs say it wants—"its feet in the water and its head in the fires of heaven." The date gardens yield crops year after year, century after century. As one tree dies, another takes its place. Some oases are known to have been yielding steadily since the time of the Romans. The date garden yields ten to twenty times as much food as a wheat field of the same size.

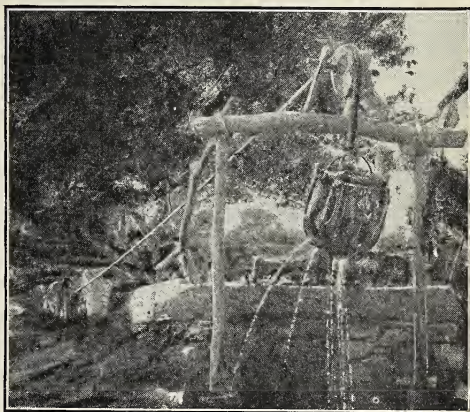


Fig. B. Tell how this oasis garden is being irrigated.

Three-story farming. Because much food is needed, the people in these oases have developed a wonderful system of agriculture. Beneath the tall, open-topped date palms, they plant smaller trees, such as apricots, olives, and oranges. Beneath these trees, vegetables are grown. This three-story agriculture yields so much that a tiny patch of ground will support a family. Arabs will sometimes pay at

the rate of \$5,000 an acre for a bit of land with palm trees on it and a stream to water it.

Oasis land is so precious that the people do not put houses on it. They build their villages on the desert beside the oases. In the early morning and in the late evening the people are working their oasis gardens, carrying water, vegetables, and bundles of clover, and milking the goats. At noon the settlement is very quiet, because nearly everyone sleeps during the heat of the day.

Mysterious Arabia. In central Arabia is a long plateau. Parts of it are 5,000 feet above the sea. This greater elevation causes more rainfall. The greater rainfall makes it possible for more people to live in this part of Arabia. Therefore Arabia has two centers of population: a fringe of people along a few moist parts of the coast, and those who live near the central highland. Wide, empty deserts that are hard to cross lie between these two partly settled areas.

Many streams flow down from the central highland of Arabia. Once several of these streams ran together and made a river which reached the Persian Gulf, but this was ages ago. Now all streams are lost in the sand a short distance from the plateau. But at the foot of the plateau there is a strip of land four hundred miles long where nearly every little valley has an oasis or two.

Some of the oases are so tiny that there is room for only two or three date trees; others are five or ten miles in length and their trees and gardens support thousands of people. It is a long, hard journey across the desert to these Arab towns and cities. Very few white men visit them. Besides, the Arabs do not welcome visitors to mysterious Arabia. Therefore it is doubly dangerous to travel there.

An independent town. One of these oasis towns lies with its springs in a little valley entirely surrounded by a waterless plateau, yet it has 10,000 inhabitants. The town has been absolutely independent for centuries. None could conquer it.

Yemen and Mocha coffee. A small part of southern Arabia, called Yemen, has a high mountain facing the Red Sea. This land receives enough rainfall to enable it to grow coffee and a grain somewhat like Kafir corn. It was from this region that the people of Europe first received coffee. Mocha coffee from Yemen is one of the most expensive coffees.

The agricultural district of Yemen is so small and precious that the people have terraced their hillsides like steps (Fig. 64-A). This keeps the land from washing away, and keeps the water from running off.

Oman. At the corner of Arabia is the kingdom of Oman. Find the elevation of its mountains. Like central Arabia, Oman has many valleys where streams water the gardens and date orchards. Here many thousand people grow dates for their chief money crop. Camels carry the dates down to Muscat; steamships carry them to foreign lands.

THINGS TO THINK ABOUT AND TO DO

Continue your map. Add to your map the oases of Suf and M'zab in the Sahara; small oases and Yemen and Oman of Arabia.

Riddles. 1. Only sand; no sign of water; yet date palms grow. What is it?

2. Always carrying away sand, yet always buried in sand. Who is it?

See if you can catch your classmates by making other riddles like these about "Wells of M'zab," "Three-story farms," "Coffee fields of Yemen," etc.

List. 1. Export from Yemen; from Oman.

2. Densely populated parts of Arabia.

3. Ways of getting water at small oases.

4. Animals of oases.

5. Oasis crops.



Photo Publishers' Photo Service

Fig. A. Four of the most famous objects of interest in Africa: the River Nile; the ancient pyramids near its banks; the Arab; and his camel, the "Ship of the Desert."

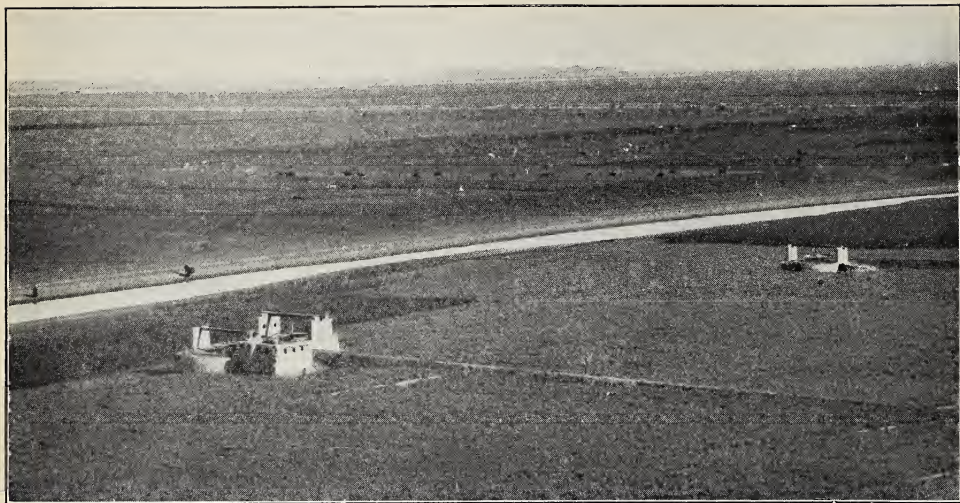
THE GREAT RIVERS AND THE GREAT OASES

Water from distant mountains. In two places large rivers, rising in distant highlands having heavy rainfall, carry much water into the heart of the desert and on across it. Thus much land in the plains of Egypt and Iraq can be irrigated. They are two of the four greatest oases in the world, and they support millions of people. The other two oases are the Imperial Valley in California and the valley of the Indus River in India (page 252). These oases also get water from distant mountains.

Egypt — the world's most famous oasis. In Egypt (Figs. 53-A [V6]; 280-A) are more people than can be found in all the other oases of the Great Desert and all the nomad camps combined. This is true because of the precious water of a great river. The Nile, called by the

natives *Father Nile*, rises in the rainy highland of Ethiopia and in the great lakes of Central Africa, and carries water across the entire width of the desert. This river alone makes the great oasis called Egypt.

Once each year, because of the rainy season at its sources, the waters of the Nile rise and overflow the river banks. The water spreads over the plain along the lower courses of the river and in the delta. When the flood begins to go down, the natives of Egypt walk out into the pools of water to sow the seeds of wheat and barley and of a native grain called *durra*. The seeds fall into the water and settle in the mud. When the water is gone, the plants, fed by the moisture of the soaked earth, grow rapidly, and ripen their harvest in the blazing desert sun. For thousands of years grain has been grown in this way in the Nile Valley.



© Ewing Galloway

Fig. A. The streak of white across the center of this picture is the Nile River; the level fields are a part of its valley. As the water in the river rises, what happens to this flat land?

This amazingly fertile valley is just a strip of green fields only a few miles wide, between two long rows of low, bare, glaring desert hills. These hills are the edges of the Great Desert.

Endless fertility. In twenty-five years the Nile mud builds up its flood plain only about one inch, but that is enough to keep it yielding fine crops and thus feeding millions of big, strong, good-natured black people, called *fellahs* or *fellahin*.

This Nile flood, with its fertile mud, makes the richest kind of land. The river rarely fails, nor does its water ever come rushing along in a destructive flood. The water quietly rises, drops its mud, fertilizes the land, goes away again, and comes back the next year to do the very same thing, just as gently and richly as the year before.

In most parts of the world the farmer who plants a field for a few years finds that the crops take the plant food out of the soil and the earth becomes poor. The later crops are not so heavy as were the

first. After a few more crops, the farmer must move to another field. In Egypt, the farmers have kept on and on and on, getting fine crops year after year, generation after generation, century after century.

Native life and native farming in Egypt. Today, as for more than five thousand years, the traveler sees flood plain and delta dark green with heavy crops. Here and there groves of tall palm trees stand on a little mound of earth a few feet above the flood-water level. On the mound is a village of brown mud huts. The simple house has walls of sun-dried brick set in mud. The roof is only a few rafters of date-palm trunk covered with palm leaves and plastered on top with mud. There is an opening that serves as a door, but there are no windows. Inside the hut are a few sleeping mats, a few earthen vessels, a hand mill for grinding grain for bread, and a few yards of cotton cloth from England. Such is the home of the man who plows the fertile flood plain with a crooked stick drawn by oxen.

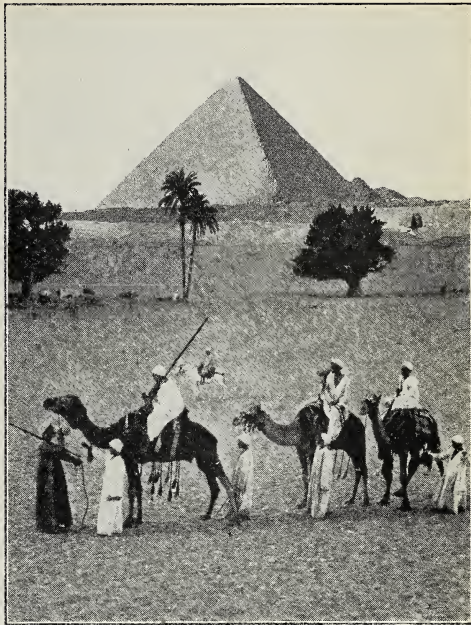
His ways have changed but little from those of his ancestors.

Floods — conquerors and great buildings. The fellahin of the Nile flood lands have been ruled first by one foreign conqueror, then by another. Thousands of years before Christ, lordly nomad tribesmen from the north took possession of the Nile Valley and ruled over it and all its people. Those ancient conquerors wanted to build tombs for themselves so that none could forget them; so they built the huge pyramids. For this great work they used thousands of slaves and thousands of camels; but just how they managed to put the great blocks of stone in place is not as yet known.

Enormous pillared temples, built by the ancient Egyptians, still amaze us, as do writings in stone and on sheets of papyrus made from reeds that grew by the Nile.

How did it happen that these wonderful buildings and monuments were built in an oasis in the midst of the greatest desert in the world? Abundant and constant food is the answer. Because it was so easy to raise food, there could be many people in the land and the kings could have hundreds and thousands of workers who need not raise their own food. Therefore kings could make the people build buildings and do other things at their command. Tens of thousands of workers were required to complete great buildings like the pyramids (Fig. 29-A), the great temples, and great statues and monuments like the sphinxes (Fig. 29-A) and obelisks.

Nile flood and early civilization. This large food supply caused the first kingdoms of the world to be developed in Egypt, and for more than five thousand years, farms, irrigation, and cattle have supported a dense population there.



© Keystone-Underwood

Fig. A. Pretend that you had taken this beautiful picture in Egypt. Tell something about the Pyramid of Cheops; the Sphinx; the dry desert; the trees that find water beneath the soil; the "Ship of the Desert" and his masters.

The kings of Egypt made secret tombs in the rock and in them they buried their dead, together with tools, jewelry, and even with little models of their farms, fields, cattle, servants, mills, and boats. Great burial chambers have been uncovered (or excavated) and the objects thus found tell interesting things about the life and customs of the ancient Egyptians.

Modernizing Egypt. Recently some changes have come in Egypt. The age of machinery and engineering has begun. Railroads and telegraph lines have been built. The people can now grow a crop, sell it, get the money, and buy goods from other countries. Never before did Egypt produce so much wheat, corn, rice, durra, and sugar as now. Her swarms of people eat most of these products; but they export some early vegetables and cotton.



© Publishers' Photo Service

Fig. A. The airman who took this picture flew rather high in order that you might see much of the city of Cairo, Egypt, the Nile River at Cairo, the cultivated fields across the Nile, and, in the far distance, the Pyramids. All the houses have flat roofs. Why? Can you see where the desert begins?

There are fields of clover for the donkeys, oxen, and camels, and there is cotton to sell. It has been found that Egyptian cotton is the best of all cotton. Its threads are longer and stronger than those of other cotton, and much of it is used in making tires for automobiles.

Much of the recent change of Egypt is due to the British, who ruled Egypt for many years. In 1922, however, Egypt became an independent country with its own king and parliament.

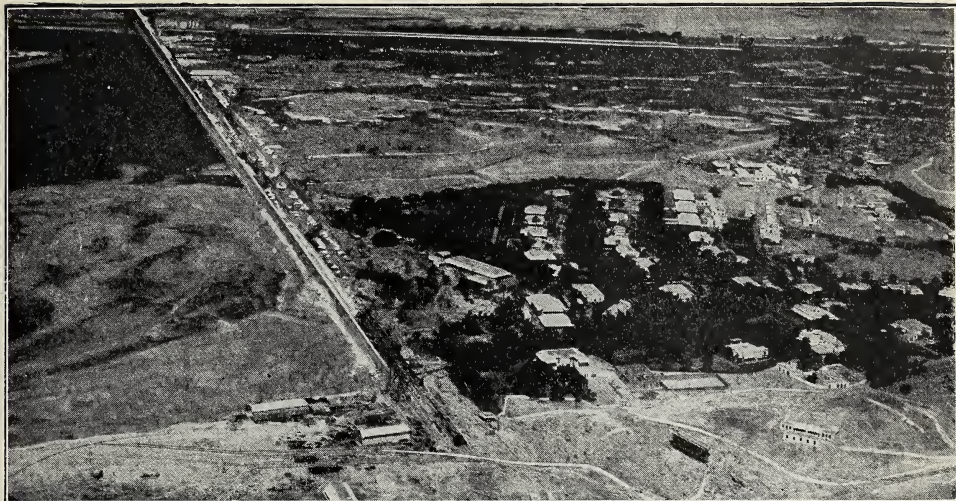
Cairo and Alexandria. The Egyptian capital, Cairo, is the metropolis of the oasis world and the largest city of Africa. Cairo is at a crossroads where the Nile Valley reaches the Mediterranean; the Isthmus of Suez makes a bridge to Asia; and the Suez Canal crosses this isthmus

and provides the great shipway from Europe to the Far East.

Cairo has more people than St. Louis or Boston. It has become a great center for European and American tourists who want to make a winter trip in search of health and recreation. Here the traveler sees a Mohammedan city, full of men of many nations. Near by are the ruins of many ages; in museums are collections of Egyptian antiquities and works of art.

Alexandria, the Nile port, has more people than New Orleans.

The Aswân dam. Because Egypt has almost 1.7 persons to the cultivated acre, more land is needed. At Aswân on the Nile, the English engineers and the fellahin workers have built a great storage dam to hold back some of the flood waters so



Sir Alan Cobham from Ewing Galloway

Fig. A. The great dam at Aswân, Egypt, as seen from the air. Run your finger along the dam. See the mud flats behind the dam. English engineers are now building the dam higher in order to hold back more water for irrigation. Compare the land along the banks of the river here and in Figure 28-A. Why the difference?

that the water may be carried in canals to land which floods do not reach. This water is increasing the area of Egypt's fields, but the yield is not so good as that of the natural flood irrigation. Some say it is because the water stored in the dam, unlike that of the floods, does not carry rich mud, most of which settles behind the dam.

To get more land, the Egyptians, with the help of the English, may follow the example of Holland and drain the shallow salt lakes or bays at the outer edge of the Nile delta, and irrigate them with the water stored in dams hundreds of miles upstream.

THINGS TO THINK ABOUT AND TO DO

Continue your map. 1. Trace the Nile from Ethiopia across Egypt.

2. Trace the Tigris and Euphrates from Armenia across Iraq.

3. Mark the highlands that are important to the great oases.

4. Locate Alexandria, Aswân, Isthmus of Suez, Baghdad, Mosul.

New words. Use each of the following words in a sentence about Egypt: durra,

fellahs, pyramids, temples, sphinxes, obelisks, papyrus, flood plains, delta, sun-dried brick, earthen vessels.

A museum. Carve an obelisk or a sphinx in soap; carve a wooden, bent-stick plow; carve other Egyptian objects which you have read about in this chapter.

An experiment. Stir some mud in water. Pour the water over a pavement or let a few drops of it dry on paper. Explain how Egypt was made fertile.

Some puzzling why's. 1. Why do Egyptians plant seeds in water?

2. Why are Aswân waters of less value than natural overflows?

3. Why did Egypt have the first great kingdoms in the world?

4. Why do so many people live near the Nile River?

5. Why do not the Nile overflows cause drowning and destruction?

A trade map of the two great oases. 1. On a world map, show by a red line the route through the Isthmus of Suez from England to India; to Basra.

2. Show by a blue line how much longer the routes would be without the canal.

3. Show by a green line how Cairo is at a crossroads.

4. List along these lines the products and the exports.

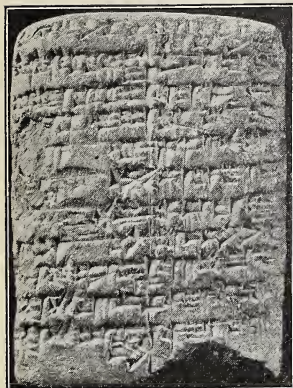


Fig. A. This tablet of baked clay contains the record of an event which happened in the city of Babylon many, many centuries before America was discovered. The impressions on the clay, even in this small reproduction, are still quite clear.

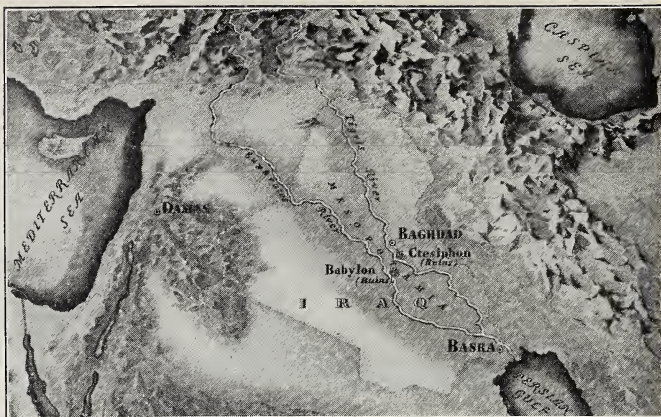


Fig. B. Mesopotamia, the country between the two rivers, now a part of Iraq. As you read the story, find on the map each place described in the text. Look closely at this map and tell how the two rivers flowing through this dry land are supplied with water. Tell from the map why Mesopotamia is an easy land to irrigate.



Photo J. Russell Smith

Fig. C. In the desert near the Euphrates men have dug through layers of wind-blown sand and uncovered the ruins of the ancient city of Babylon. The picture shows a part of these ruins.

IRAQ — ANOTHER GREAT OASIS

The land of the two rivers. The Tigris and the Euphrates, fed by the spring rains and melting snows from the mountains of Armenia, flood thousands of square miles each year. Like the streams of California, they have partly filled a great arm of the sea with earth. Even within historic times these two muddy rivers have built all the land between the place where they unite and the Persian Gulf, and they are still at work.

The plain between the two rivers has for a very long time, indeed, been called *Mesopotamia* (the country between the rivers). Now it is part of a larger country — Iraq.

Like Egypt. As in Egypt, the rivers of Iraq bring water which makes rich a desert valley in a hot, sunny land. As in Egypt, men irrigated this valley thousands of years ago, and built great cities. Perhaps you have heard of Babylon and of Nineveh and of Ur of the Chaldees. These people wrote by scratching letters on little blocks of moist clay. Then they burnt the clay until it was hard like bricks (Fig. 32-A). Their clay libraries have lasted far better than our records can possibly last. Many clay blocks (or tablets) have been dug up. Some were books or lessons in arithmetic or accounts of some merchant. From these clay libraries we have learned a great deal about the life and laws of these ancient peoples.

Here the ancient cities of Babylon, Nineveh, and Ur, and the kingdoms of which they were capitals, were almost as

wonderful as those of Egypt. But the two rivers were not so kind as was the Nile. The rivers of Iraq carry much more mud than does the Nile, and they make greater floods than does the Nile. Therefore it took a great deal of work and much skill to keep the irrigation canals from choking with mud. If the government became filled with grafters, or if there came some foreign ruler who did not care, the ditches filled with mud, the farms dried up, people starved, and the cities went to ruin.

Today, the chief city, Baghdad, is built on a soft bank of mud brought down by the river, very much as is the city of New Orleans.

The old and the new. In Iraq, as in Egypt, we see a mixture of the old Asiatic ways of doing things and the new European ways. As I rode about in an automobile, I saw army airplanes flying overhead and a line of autotrucks speeding along. But these modern machines, the airplane, the automobile, and the truck, have not replaced the ancient burden bearers of the East, for a string of donkeys plodded along, almost buried beneath their huge loads of straw stuffed into rope nets. Their Arab master stalked behind, shouting as he urged the strong little beasts. Lines of camels shambled along the road, carrying bales of goods down from Persia to a steamboat landing on the Tigris.

Camel caravans come from many directions, but the desert between Baghdad and Damascus happens to be so level, smooth, and firm that automobiles can cross it without the trouble of anyone's making a road. When I made this journey, the Bedouins were not particularly friendly, so we hurried, covering the 690 miles between ten o'clock in the morning and eight o'clock the next night. We took a little sleep sitting in the car.



Photo J. Russell Smith

Fig. A. The ruins of an ancient irrigation canal which centuries ago brought water to the dry lands of Iraq. Trace with your finger the right bank of the canal, the left bank, the gully in the middle.

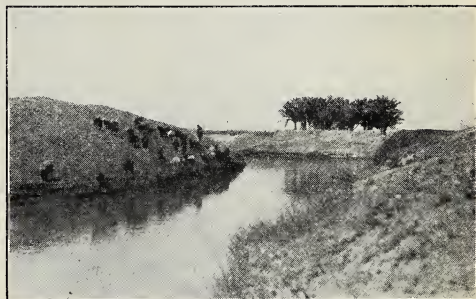


Photo J. Russell Smith

Fig. B. This old irrigation canal is still in use between Baghdad and Babylon. What do you see in this picture that you do not see in Figure A? Why?



Photo J. Russell Smith

Fig. C. The desert road between Baghdad and Damas (Damascus) which you read about on this page.

Interesting ruins. In many places in Iraq I could look in one direction and see the dry land, with only scattered bushes and bunch grass. In the opposite direction, on the river's bank, I could see a



Photo J. Russell Smith

Fig. A. In the foreground is the Arab village near the ruins at Palmyra about which you will read on this page. See the columns of an ancient temple and the ruins of a fortress on the skyline.



Photo J. Russell Smith

Fig. B. Hamal or street porter in the streets of Baghdad doing the work of a truck. The black and white band which he wraps around his head is made of goat hair.



Photo J. Russell Smith

Fig. C. The arch of Ctesiphon, near Baghdad in Iraq. Inside the arch was the great hall of an emperor.

fringe of palm trees and gardens, watered by natives who laboriously lift the water from the stream (Fig. 37-A), or perhaps pump it up with gas engines. In many places the earth is filled with pieces of broken pottery and old bricks. A great arch remains from a palace in one ancient city, but most cities are now only ruins buried beneath the earth. Near the site of the ruin that was once the city of Babylon, is an ancient canal built by King Nebuchadnezzar to irrigate this plain. The site of the old canal is shown by

great piles of earth shoveled out of the channel by the slaves of ancient times (Fig. 33-A). Other ancient cities, the remains of which are in this land of the two rivers, are Nineveh and Ur of the Chaldees.

The now ruined city of Palmyra in Syria was once a great trading city. It became great because it was near a good oasis and at a place where two great caravan routes crossed. One of the routes extended from Egypt northward to Asia Minor, the other from the coast of the Mediterranean Sea eastward to Mesopotamia and Persia. The Romans destroyed Palmyra. Today hundreds of marble columns and a great ruined temple stand lonely in the sand to mark the place where once stood a great city. When I crossed the Syrian Desert, I ate breakfast at Palmyra and saw there only a small Arab village huddled among the walls of the great ruins.

The kingdom of Iraq. After the World War, this valley with a population of more than three million people passed to the

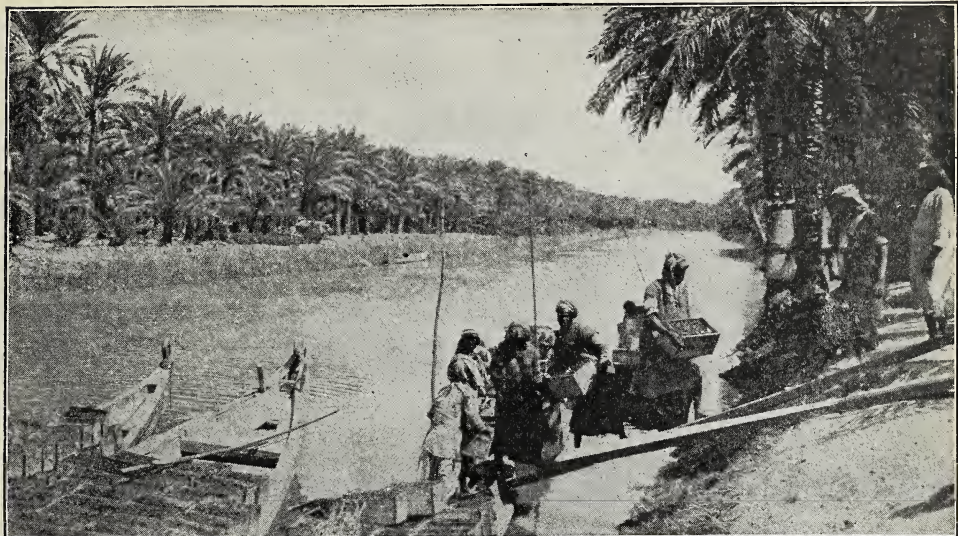


Fig. A. A primary canal in the date gardens near Basra. Twice a day the tidal waters from the Shatt-el-Arab flow through this canal and irrigate this ancient land. Date palms stand like a forest along the canal for miles and miles, with here and there a village with houses of sun-dried brick.

control of Britain. Afterwards, like Egypt, it became an independent kingdom. Perhaps the government of Iraq will let modern industry make another Egypt of the land of the two rivers. Even under the Turks, steamboats went from Basra to Baghdad; and ocean steamships carried from Basra to New York nearly all the dates that we ate in this country. The waters of the river near Basra irrigate the largest date orchards in the world. Date trees line the river banks for miles, and in winter a crop of wheat is grown beneath the trees.

Europe looks to these hot valleys, as it does to Egypt, for a part of its supply of cotton fiber, which is so important for the world's clothing and industry.

Other resources. There is petroleum in the northern part of Iraq. It is found from Mosul to the Persian Gulf (Fig. 3-A). This great business, a part of which is in Persian territory, will remain as long as the oil holds out.

The desert shore has fishermen. They live on the shores of the Persian Gulf, go out in small boats, dive down into the shallow waters, and bring up in their hands oysters. Some of the oysters have pearls in them.

THINGS TO THINK ABOUT AND TO DO

Model Iraq. Make in a box of sand, or in the school yard, a model of Mesopotamia. Put in the two rivers, the mountains where they rise, three cities, the great date orchards, some nomad Arabs, oil wells, a steamship.

On a different scale. Make models of an irrigation canal in use, and of an old abandoned canal.

Make as many different endings as you can to these sentences:

1. Iraq is like Egypt because
2. Iraq is not like Egypt because

Tell a story. Tell a story of a pearl, a date, a fleece of wool, and a cargo of oil exported from Iraq.

Extra work for interested pupils. Read in other books about the following: Pearl Fishing in the Persian Gulf; Ancient Egypt; Babylon, Nineveh, and Ur of the Chaldees; King Nebuchadnezzar.



© Ewing Galloway

Fig. A. The sacred city of Mecca (Fig. 3-A [P-4]). In the center of the picture is the mosque, an open area surrounded by pillars, and containing the *Kaaba*, a small stone temple. In the wall of the Kaaba is the sacred black stone of Mecca. Every Mohammedan believes that he should visit Mecca, march seven times around the Kaaba, and kiss the sacred stone at least once in his life time.

GOVERNMENT AND FUTURE

The kingdom of Arabia. You have already read about the governments of Egypt and Iraq. During the World War the British promised the Arab chiefs of central Arabia that they could have a kingdom of their own if they would help fight the Turks and the Germans. Their kingdom is called "Saudi Arabia" after its ruler, Abdul-Aziz Ibn Abdur-Rahman Al-Faisal Al-Saud, commonly called Ibn Saud. It claims much of western Arabia, sometimes called the Nejd, and the Arabs plan to let no one but Mohammedans enter it. It contains the sacred city of Mecca, the birthplace of Mohammed, to which millions of Mohammedans desire to make a journey at least once in their lifetime. It also contains Medina, Mohammed's burial place, which is a very impor-

tant place of pilgrimage. Mecca now has a radio sending station, and pilgrims go from its port on the Red Sea in autos and busses.

The king of Arabia will probably have but little better success than the Turks had in ruling some parts of central Arabia.

Yemen, ruled by an imam, and Oman, ruled by a sultan, are independent.

Protectorates, colonies, and a mandate. Koweit, the Bahrein Islands on the east, and Aden and Hadramaut on the south, are British protectorates. This means that the British let the people rule themselves in almost every respect, but allow no other foreign power to interfere. A recent traveler in Hadramaut met people who had never seen a white man.

Trans-Jordan, another little Arab state, is ruled by a native king under a British

mandate. Near the Dead Sea, the western edge of Trans-Jordan is high enough to get sufficient rain in some years to make a wheat crop. The rest of the area is nomad land. One of the tasks of the government is to keep the nomads from raiding and eating the farmers' crops.

Libya (Fig. 278-A) now belongs to Italy, and most of the Sahara and North Africa belongs to France, but the nomads of the edges of the Sahara and the people of the small oases may be said almost to rule themselves. It would be impossible for a governor in a town to rule four or five families of Bedouins far away in their moving camps.

The future of the Great Desert and the oases. Much of this enormous region that stretches over the entire width of one big continent and occupies a large corner of another, will remain as it is now, dead desert, or nomad land with no more people than it now has. In some places artesian wells may make new oases as they have already done in Algeria where the French have dug the wells.

The new government of the kingdom of Saudi Arabia is trying to become modern. There are many places in nomad land where water can be had if raiding can be stopped. This the king is trying to do. He has sent educated men to teach the people to be farmers and to teach them "their duties to God and king and country." Schools have increased, and he has begun to establish hospitals and dispensaries.

Great changes may be expected in Egypt and still greater ones in Iraq. Iraq can have three or four times as many people as it now has, because it has several million acres of land that may be irrigated if large canals are again dug and kept open, as was done in the time of Nebuchadnezzar.

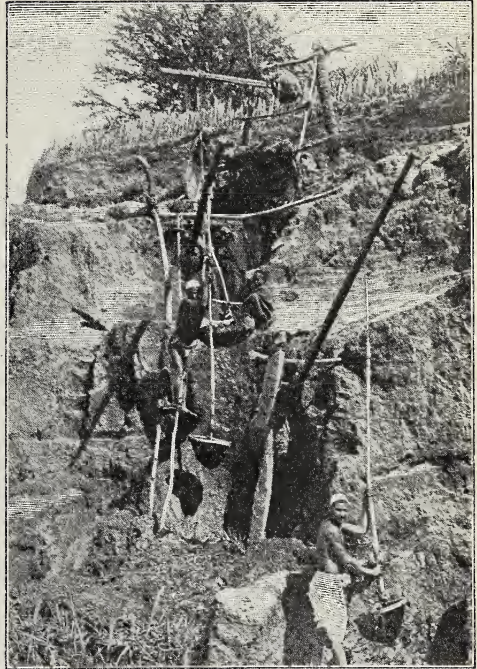


Fig. A. Natives lifting water up the bank of the Nile. Each man pours his bucket of water into a pool behind him until the last man pours it on the edge of the field, where it flows to the roots of the growing plants. Many men are needed for even a small field. Suggest a better method of lifting the Nile's waters to the field.

In any case, Iraq is not likely to be a land for Europeans. It is too hot. An American traveler, speaking of the British army in Iraq, said: "Through the months of gasping heat when from eight to five o'clock no soldier is supposed to do any work and even the animals do nothing, when people must wear helmets made of cork, and spine pads made of wool, all day, when men out in the blue lie panting in their tents longing for night to come, the most important piece of knowledge is the location of the heat-stroke station."

Now that we know how to build railroads in almost any kind of place, the discovery of minerals may make a busy town almost anywhere in the Great Desert. In Tunisia, thousands of nomads



© Ewing Galloway

Fig. A. A camel train on the famous Jericho Road between Jerusalem (Fig. 53-A [W5]) and Jericho. The camel drivers are Bedouins. Why do you think this part of the world would not be a good place for a farm? What would be needed before a city or town could develop here?

have given up following their flocks and have moved into the towns of tin shanties and sun-dried brick, built around certain phosphate mines. These mines send nearly three million tons of phosphate rock each year to feed the fields of Europe.

THINGS TO THINK ABOUT AND TO DO

Continue your map. Locate by name or initial: Saudi Arabia, Hejaz, Yemen, Aden, Mecca, Koweit, Oman, Jordan River, Dead Sea, Tunis, Libya, Algeria, Morocco.

A government map. Draw free-hand a map of the Great Desert and the Arabian Desert.

Use five colors to show: independent nations, British, Italian, French possessions. Draw parallel lines to show where nomads live.

Lessons from long ago. Why were the cities of Trans-Jordan prosperous? What caused their downfall?

CHAPTER SUMMARY

Group posters. On a piece of wrapping paper about six feet long draw a desert background of clear blue sky and yellow-brown dunes. Let different members of the group color and cut palm trees, camels and other animals of the desert, clay or stone houses, Bedouins, etc. Paste these pictures on the background to show "Travel on the Desert." Other groups may make posters for "Egypt," "Oasis Life," "Iraq," etc.

Puzzles. A land of coffee trees. Y.....n.
Land watered by two rivers. I.....q.
Crossroads of trade. C.....o.
Winds that dry the desert. T.....e.
Let each pupil or group make a long list of such puzzles, and give them to their classmates to solve.

Your study question. Look again at the population map (Fig. 57-A). Can you tell now why few people live in the desert? Can you account for the dense population of some places?



© Ewing Galloway

Fig. A. Nomadic people on a trail high in the mountains of Persia (Iran). In place of camels these people use cattle as beasts of burden. Two of the cattle have spinning wheels strapped to their backs. The people are rug weavers. Tell something about the steep mountain side in the background.

PERSIA* AND TURKEY—THE BETWEEN LANDS

☞ As you read about Turkey and Persia, think: Are these countries to be considered among the great nations of the world?

PERSIAN GRASSLANDS AND CITIES

Wide pastures, deserts, fertile oases. We might say that Persia and Turkey are *Between Lands*. They lie between the nomad lands of central Asia and those of Arabia and the Sahara. They are also lands of half-and-half—half nomad people, half oasis people.

Look carefully at the rainfall map of southwestern Asia (Fig. 56-A). How many inches of rainfall does most of the land have? If the rainfall of a given area is below ten inches, that place can have only scattered grass and small bushes, and much of it will surely be desert. If the rainfall is from ten to twenty inches, the

grass will be better, but there can be few farms except where streams bring water for irrigation. This rainfall map tells very clearly why Asia south of the Black and Caspian seas and west of India is chiefly a land for flocks. Hundreds of thousands of people in Persia and Asia Minor follow flocks, as do the people of central Asia or Arabia, or the edges of the Sahara.

Where would you spend the winter? What is the elevation of western Persia (Fig. 214-A)? of southern Asia Minor? That elevation means cold winter and snow; great hardship for the flocks and their caretakers if they try to spend the winter there. Find the two rivers that run through a great lowland and flow into the Persian Gulf (Fig. 32-B). Because it is lowland, winter in this great valley is much warmer than in the near-by mountains of Persia and Turkey. Snow is

* The local official name of this country is Iran.

Fig. A. **C-B** is the surface of the earth near the foot of a mountain in Persia. **E-D** is the surface of the ground water that might be reached by digging a well. **A-B** is a tunnel, called a *kanat*, which the Persians dig into the hillsides so that the water flows out at **B**. **H-I** is one of the many vertical shafts that men dig and take out the earth in the tunnel between **B** and **A**. These rows of wells with piles of dirt by them are to be seen by the hundreds in Persia. Sometimes they are more than a mile long. The Persians have been making them for many centuries. **F** is a wall within which are the houses, the poplar trees, and the gardens irrigated by the water that flows from the *kanat*.

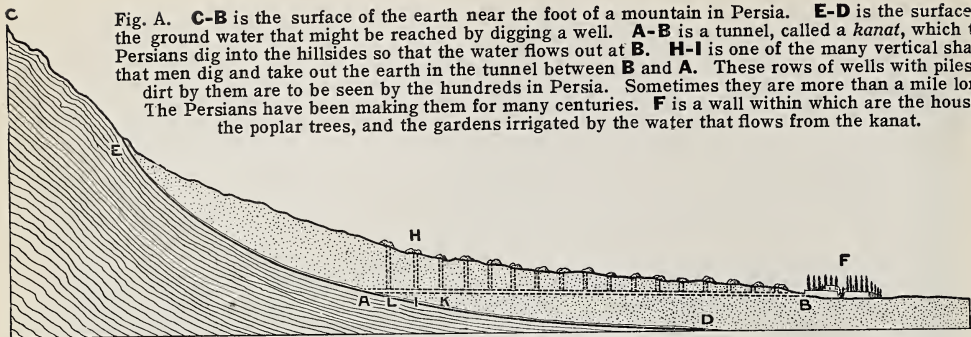


Photo J. Russell Smith

Fig. B. A Persian "freight train"—one camel and four donkeys—carrying sugar, tea, and cotton cloth up the side of a high ridge near Hamadan (Fig. 214-A [N-3]).

almost unknown in the land of the two rivers. In which place do you think the nomads prefer to spend the winter, in the snowy highlands of Persia and Asia Minor, or in the lowlands of Iraq? Which place would they prefer in summer? Why? If you have answered these questions correctly, you understand what follows.

Every autumn hundreds of thousands of flock-following families come down from the mountains of Persia and Turkey with their flocks and their tents, to spend the winter in the warm lands of Iraq. When spring comes, they move again to the cool and beautiful mountain pastures. Many of these shepherd people are called *Kurds*. The mountains of eastern Turkey and western Persia are called *Kurdistan*—the land of the Kurds.

The maps and the text. Find Persia and Turkey on Figures 3-A, 2-A, and 56-A. Reread pages 39-40, and prove what they tell you by checking the text with the maps.

Rainy season — dry season. The little rain that Persia gets falls in late autumn, winter, and early spring. The spring is a season of great beauty. Green grass and rich pastures are dotted with flowers. The frisky lambs are fat, and little black goats and colts gallop gaily beside their mothers in the open spaces.

How different everything is after three rainless months! The sheep then pant with heat. The entire country is bare and brown except where water can be had.

The village. Scattered over Persia are people with two entirely different modes of life. One is that of the moving tent dweller. The other is the farmer who lives in a village with his farmer neighbors and goes out daily to cultivate his fields outside the village. Persia has hundreds of villages and small towns. Some are in the highlands of western and northern Persia. These mountains are higher than our Appalachians. They have enough rain to enable the farmers to grow wheat by dry farming, as we do in some parts of the western United States. The people of these upland towns and villages usually have fields of wheat, a flock of sheep and



© Ewing Galloway

Fig. A. A village on a mountain side in Persia. Some of the villagers came out on one of the roofs at the left to have their pictures taken. This village is somewhat like the Pueblos in New Mexico, about which you studied in an earlier grade.

goats, and perhaps a donkey or two. These things are their wealth. Many of the villages are at the mouth of a *kanat* (Fig. 40-A) which supplies water for the people, the animals, and some gardens. Irrigated gardens, green with vegetables and fruit trees, and bright with flowers, are greatly loved in Persia. The Persians have many poems about beautiful gardens.

Cities. Some of Persia's mountains are higher than our Rocky Mountains. Many of the larger cities of Persia are foot-of-the-mountain irrigation cities. Several rivers fed by mountain rain or snow bring water to irrigate thousands of acres of land, and thus support Tehran, Shiraz, Meshed, Isfahan, Hamadan (an ancient capital), and other Persian cities.

The streets of the cities have many interesting bazaars, workshops, and Mohammedan mosques with high-domed tops (Fig. 78-A). You will also see many camel and donkey caravans. You will find some people who have been students in college in the United States or

Europe. Some Persians are very cultured people. Persia's neighbor cities on the north, Merv, Bokhara, Samarkand, and Tashkent, are like the cities of Persia — foot-of-the-mountain irrigation cities. So are Kashgar, Yarkand, and Hami far to the eastward of Samarkand. Could they help to support a caravan route from China to the Mediterranean?

THINGS TO THINK ABOUT AND TO DO

Map studies about Persia. Below you have figure and page references and a number of expressions. After you have studied the references, write each of the expressions in a sentence which tells something about Persia.

1. (Fig. 214-A) plateau; 12,000 feet; rivers; Caspian Sea; Persian Gulf; Afghanistan; Tehran, caravan route.

2. (Figs. 56-A, 57-A, 95-A, and 94-A) rainfall; population; winter temperatures; summer temperatures.

3. (Appendix) size compared to your state; population compared to your state; exports; imports.

4. **Writing questions.** Write ten questions for your classmates to answer about this unit. Be sure that you can answer each question yourself.

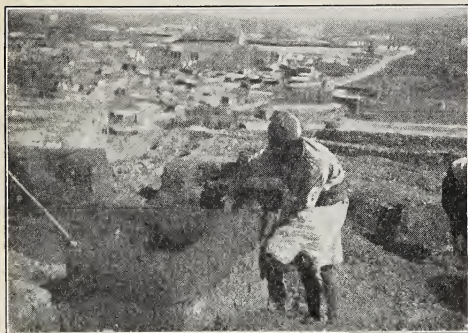


Photo J. Russell Smith

Fig. A. On a hill at the edge of Kermanshah I saw this Persian putting a fresh layer on the mud wall of his new home.



Photo J. Russell Smith

Fig. C. After the rain my Persian friend climbed to his roof and patted down the wet earth with his wooden shovel. Why did he do this?



Fig. B. A Persian charcoal merchant on his way from mountain to market. Where did he get the charcoal? Where will he sell it?

THE MUD VILLAGE AND TRADE

The mud house. How would you build a house, if you had nothing but a bare hillside and one rather tall tree about as thick as a boy's body? Figure A shows a Persian at work building such a house. He has mixed earth and water to make stiff mud. With the mud (or clay) he will build a wall around the four sides of a square or rectangle. When the wall is a little higher than the man's head, he will cut the trunk of the tree into two or three pieces, and place the pieces across the top of the wall. The branches and twigs of the tree he will place from log to log to hold the roof.

Remember that you have only a bare hillside, and one tree. What, then, would you use for the roof of your house? The Persian puts earth on the twigs and branches that he laid across the logs. When the earth is about a foot thick, he will pack it down with a shovel. If a Persian is rich, he may buy two or three boards from some distant place and make a door of them. But most Persians hang a curtain of sheepskin or felt of goats' hair in the doorway.

This house of one small room has a floor of dirt, dirt walls, and dirt roof, but it is warm in winter and cool in summer, which is more than we can say for the frame house, of which we have so many in the United States. Also, because he gets the material without expense, even a very poor man can make a house for himself. After every rain, the Persian must climb to his roof while it is still wet, take a shovel, and pat down the earth roof (Fig. C); otherwise the roof will leak the next time rain falls upon it.

Why does the Persian not use bricks or lumber or stone, as we do when we build a house? Bricks require fire to burn them. The Persian has very little wood to make a fire. Cement requires fire to burn it;

so does lime to make mortar. Therefore a stone wall held together with mortar or cement is expensive. Why does he not use lumber? Most of his country is without forests, and most of the people live many days' journey from a railroad that might carry lumber. I have traveled in Persia, but I never saw a good forest. Most of Persia is so dry that trees cannot grow. Even if a little tree starts to grow in a moist place, it is almost sure to be eaten by some of the sheep or goats that roam the hills. For several thousand years animals have roamed over this unfenced region. What chance does a little tree have, even if there were enough water?

What can Persia sell? Exports must be carried to market. What does this mean for Persia? Use the scale of miles and the map (Fig. 3-A) and measure the width of Persia from east to west. Where would that distance take you in going west from New York? How long is Persia from north to south? How far would that distance take you going south from Pittsburgh? from Chicago? from San Francisco?

Persia is about thirteen times as large as the State of New York. Try to think how people manage their affairs who live in so large a country with only 230 miles of railroad. The Anglo-Persian Oil Company has built some roads in the oil field. Other than that, Persia has few good automobile roads. Automobiles and trucks are used on the main routes from city to city, but they often climb through ruts, mud, and dust. Recently the freight a ton by truck from the coast to Shiraz was \$75.

In Persia, most of the things which the people buy and sell must still be carried for miles or days on the backs of camels and donkeys (Fig. 40-B). What can the people who live in the mud village sell if it must be carried on a pack animal for a



Photo J. Russell Smith

Fig. A. On the road between Hamadan and Kermanshah I passed this Persian. He makes his living by gathering brushwood for fuel. See the snow-clad mountains. How might they be useful in a dry land?

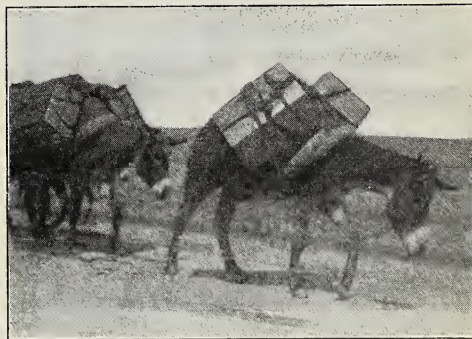


Photo J. Russell Smith

Fig. B. The donkeys are part of a long train which is carrying cases of gasoline to Tehran (Fig. 3-A [P-3]).

few days and then by truck for a few hundred miles to reach Baghdad or Basra, or one of the small ports on the southern coast of Persia, or to a city on the Caspian Sea? If they sold wheat, the freight would cost several times as much as the value of the wheat. The same would be true of the meat or cheese which they produce from their flocks.



Photo J. Russell Smith

Fig. A. The water supply in Hamadan, Persia. How is the delivery of water in Persia somewhat like the delivery of milk in the United States?

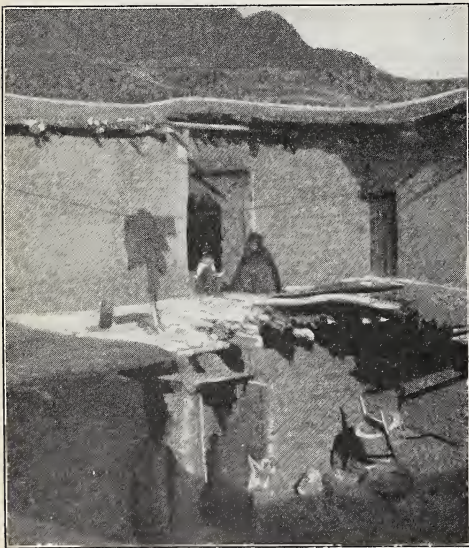


Photo J. Russell Smith

Fig. B. The best inn in a hundred miles—a town in the mountains of west Persia. On the second floor are rooms for the guests and the family. The first floor has rooms for the animals.

The Persian rug. The flocks of Persia give the people the material for rugs—the one thing that most parts of Persia sell to other countries. The Persian people shear their sheep, wash the wool, dye it, spin it into yarn, and then patiently make fine, beautiful rugs. The hair of camels and goats is also used in this industry. A man or a boy or a woman

may work a week or two weeks to make one square foot of rug. The entire family may work for two or three years before a rug is finished and sent to market on the back of a donkey. You can doubtless understand why rugs and beautiful Persian shawls are the chief exports of much of that large country.

Other exports. Persia also exports opium, which is the gum that runs out of the seed pod of the poppy plant when the pod is cut. Much work is required to make even a small quantity of opium; so opium is very costly. Why can the farmers of interior Persia export opium and not wheat?

The chief export of Persia in quantity and value is petroleum (page 35). The producing wells are in the western part of the country, near the Iraq border. Pipe lines carry the oil to tank steamers. The industry is run by Englishmen and Americans. Machinery and pipe from the United States and Europe are used. Drilling for oil is a new industry that dropped down into old Persia suddenly a few years ago. When the oil wells go dry, the industry will disappear as suddenly as it came, and the nomads' flocks will again roam there and nibble grass as they did five thousand years ago.

What do Persians buy? With the money they get from selling rugs and opium, Persians of the interior buy chiefly: cotton cloth, sugar, tea, kerosene, and gasoline. The Persian loves a cup of tea or coffee and a chat with his friends. The kerosene lamp lights his home.

"Why have the roofs fallen in on some of the houses in nearly every village?" I asked in Persia.

"Oh," said my Persian friend, "those people starved to death in the famine eight years ago. We had two very dry years."

Explain why they did not buy wheat from the United States or some other wheat-growing country.

Why has Persia so few roads? To answer this question, first ask your teacher to explain this saying: "A public office is a public trust." The Persians seem to think that a public office is a chance to get rich. Most of the tax money collected in Persia is kept by the men who collect it. It is not strange that a Persian will tell you that a tax collector and a thief are the same thing. The tax collectors too often use the people's money to build fine houses, to buy good horses, fine rugs, phonographs, and other things that they want.

Some day the young men of Persia may realize that a public office is a public trust, rather than a chance to fatten their pocketbooks with other people's money. When that time comes, Persia can have railroads, good highways, schools, telephones, and many other things.

THINGS TO THINK ABOUT AND TO DO

A map pattern of southwestern Asia. Use your map pattern of Asia and trace quickly the southwestern part of the country.

1. Show the boundaries of Persia.
2. Name each country which touches Persia; each body of water.
3. Locate each city mentioned in your text.
4. Locate the railroads; draw oil derricks for the oil wells.
5. Draw the road from Tehran to Baghdad.

New words. Use each of the following new words in a sentence about Persia: kanat, Kurds, Kurdistan.

Contrasts. Make a list of the things we get for the taxes we pay. How is this different from Persia?

Solve Persia's problems. 1. Tell why there are few roads. (A fuel reason, a surface reason, a tax reason.)

2. Tell why Persia makes rugs and shawls.

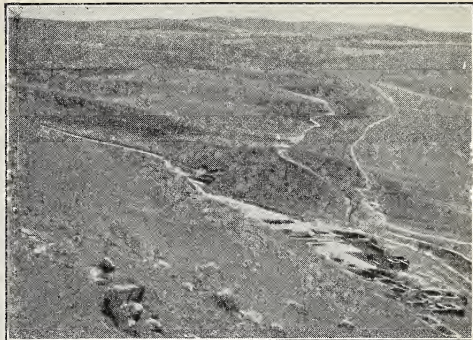


Photo J. Russell Smith

Fig. A. At the lower right is a Persian village of mud houses with flat roofs nestled beside a hill. The houses that have lost their roofs were occupied by the people who died in the famine.

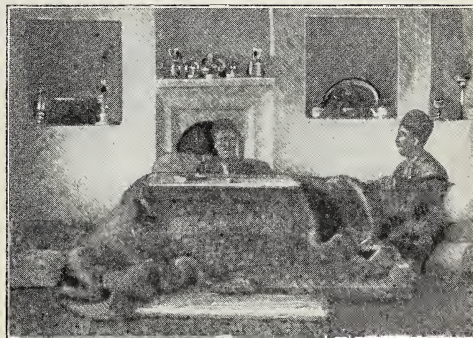


Photo J. Russell Smith

Fig. B. The *kursee*. Under the table is a brazier of fire. It heats the space and the feet beneath the quilt — a common method of keeping warm in Persia.

(A transportation reason, a raw materials reason.)

3. Tell why Persia has famines. (A climate reason, a transportation reason.)

4. Tell why Persians have mud houses. (A transportation reason, a raw materials reason, a climate reason, a fuel reason.)

Wealth of Persia.

1. Made by English and American brains, money, and equipment: O.....

2. Easily carried by camels and donkeys: R.....

3. Drug from a flower: O.....

4. Raised by Persian nomads: F.....

5. Beautiful Persia, watered by kanats or mountain streams: G.....

6. Make up other sentences like the five above.



Oroc Photos

Fig. A. The traveler through Turkey will see many town sites and much hilly or mountainous country, as in this picture. Near the river are trees and orchards. The hillsides are treeless pastures or even bare rock. The town is Amasya. The valley sends many varieties of fruits and vegetables to other parts of Turkey where the climate is not so favorable.

TURKEY

Farms and forests near the Mediterranean. One May morning I took the Istanbul express at the town of Adana, in southern Turkey (Fig. 53-A), not very far from Alexandretta. This town is on level land, the Cilician plain, which faces the Mediterranean Sea. For an hour we passed through a rich country, full of villages and farms, with wheat fields, bean fields, and orchards. We then began to climb the Taurus Mountains. The train wound in and out, through tunnels, across bridges, and up a narrow valley in the forested mountain side.

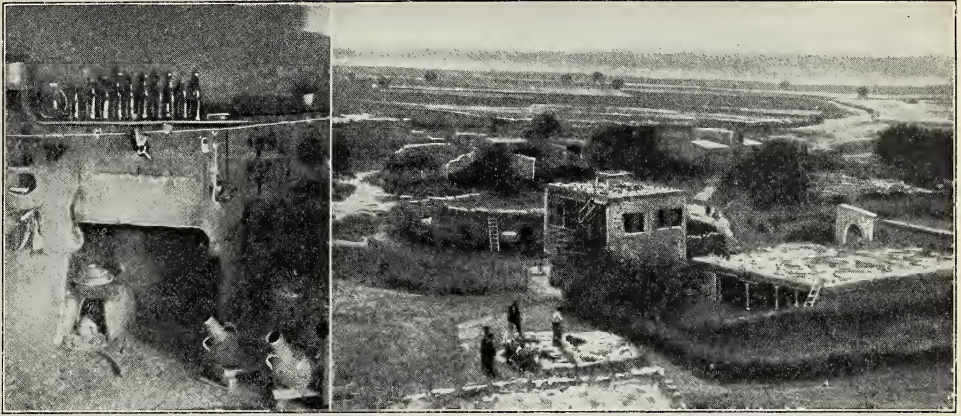
About noon, we rode for miles through a high mountain valley. It was nearly level and covered with fields of splendid wheat. Standing amidst the wheat were hundreds of English walnut trees, as fine

as any I ever saw — and I have seen them all the way around the world.

The train followed the valley to the source of its stream, crossed over a nearly level divide, and started down another little valley into the interior of Asia Minor.

The dry interior. Within an hour after crossing this divide, we were in a very different kind of country. There were no trees, no wheat, no plowed fields, and few villages. The earth was a glare of light-colored soil under a cloudless sky. We were again in the land of bunch grass and the shepherd. At evening we passed Konya. There I saw irrigated fields, and poplar trees among the irrigation ditches. These are fed by a mountain stream that flows inland and never reaches the sea. All night we rode across the dry plateau.

More trees and farms near the Black Sea. On the evening of the second day



Photos J. Russell Smith

Figs. A-B. Above is a Turkish farm village near Tarsus. We shall go inside the house in the foreground and look at the kitchen (left). See the little fireplace within the large fireplace and the many niches in the wall to hold things. The cooking for the family is done in this fireplace.

we reached Üsküdar (Scutari), across the river from Istanbul. The last hours of the journey were like the first, through a land of trees, orchards, farms, and villages.

The plateau of Asia Minor. That journey shows that Asia Minor is a land with a mountain wall on each side. Between the mountains and the seas are two moist and fertile strips (page 56). This mountain rim keeps the rain-bearing winds from carrying much moisture into the interior. Therefore the interior is a dry land, a very dry land, where trees do not grow except along the streams. In this dry land are many shepherds. Here and there, where a mountain stream brings water for irrigation, farms and towns are found.

How high is this plateau? Your map (Fig. 214-A) will tell you.

During the cold winter, some of the plateau farmers have a cheap way of keeping their houses warm. They bring in their cows, sheep, and donkeys. The people live on a raised platform six or eight feet above the floor. The stock lives below. Heat from the bodies of the animals keeps the room warm. Why do

not the Turkish people of the plateau use wood to heat their houses?

The Turkish Empire. Asia Minor was once a part of the Roman Empire. The ruins of many Roman cities can still be found there. Istanbul was a great city in the days of the Roman Empire. But before Columbus sailed to America, the Turkish nomads swarmed up out of the Turcoman's land (page 11), took Asia Minor, and captured the city in 1453. For hundreds of years the Turks had a large empire, with Istanbul as its capital. At one time they ruled Egypt, all Asia west of Persia, and what is now Greece, Bulgaria, Yugoslavia, and even some of the land north of the Danube.

One by one the peoples were freed from the Turks, until today Turkey owns only Asia Minor and a little corner of Europe near Istanbul.

Turkey for the Turks. For hundreds of years the Turks thought that their ways of doing things were much, much better than the ways of the Europeans. Since the World War, the Turks have changed their minds. Now they are making astonishing changes in their cus-

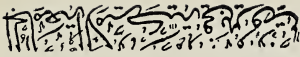


© Underwood & Underwood

Fig. A. Ankara (Fig. 53-A [V-4]), the new capital of Turkey. See if you can find three minarets in the picture. From the balconies of the minarets the call to prayer is made by a public crier called the *muezzin*. The picture is particularly interesting because it shows the hilly to mountainous nature of the plateau of Asia Minor, and, within the city, many new buildings which have been built since the capital was moved here from Istanbul.

toms and form of government — greater change was never made by any people. The rulers of Turkey decided to make in a short time all the changes that Europe and America had made during two hundred years. The new government of Turkey passed one law after another, each making some great change. One of these changes was to make everyone use a different kind of writing. Instead of the old Arabic letters (Fig. 49-A), they adopted our alphabet, which is much easier. Before telephones could be put in, everyone had to take a family name; otherwise there could be no telephone directory. Instead of being just Mohammed or Ali or Mustapha, everyone by a certain date had to pick out a last name. There were at least ten other important changes that the Turks tried to make in a short time. We cannot change things so rapidly in the United States.

The people say that they will do things in the European or American way, but that their country will be "Turkey for the Turks." They want no interference from other peoples. The new Turkish government feared to keep their capital at Istanbul. This city is at the crossroads between Asia and Europe and between the Mediterranean and the Black seas. It is a great travel center. Here the Turkish people would see so many foreigners that the idea of "Turkey for the Turks" would be hard to keep. So the Turkish government moved from the coast to Ankara in the interior. "Here we will have our capital!" they said. Here they began to build new buildings and to rule Turkey from this little town in the desert interior. The Turks say they would rather control their country themselves and be poor, than have Europeans run it, even if it made the Turks rich.



AMERICAN UNIVERSITY OF BEIRUT
BEIRUT, LEBANON

Fig. A. A letterhead in two languages: Arabic and English letters. Which is easier to write?

Fig. B. The picture at the right gives a very good idea indeed of the rough, dry, and almost treeless plateau of Asia Minor.

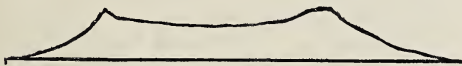


Most of the Turks are farmers. The chief exports are tobacco, raisins, filberts, wool, rugs, opium, and figs. They import everything that you can find in a store. The government is spending a lot of money on dams and canals to irrigate the dry land, and is doing many things to help the farmers produce better farm animals and to obtain better seed and better machinery. But most of the Turkish farmers still use very old-fashioned methods. It is hard to drive out the old idea, "What is to be, will be."

Turkey will be interesting to watch to see how its people succeed with their plan of making over quickly an old-fashioned people into a new-fashioned people. We shall read more about Turkey in the chapter on Mediterranean countries.

THINGS TO THINK ABOUT AND TO DO

Animated time-table. Here is a picture of our railroad track from Adana to Istanbul. Enlarge it for the blackboard or bulletin board. Beside the track write names or draw pictures of the things you would see from the train window.



A jumbled story. Rewrite the story correctly. 1. Parts of the Empire broke away.

2. Turkey changed its capital to Ankara.

3. Turkish nomads took Asia Minor.
4. The Turks captured Istanbul.
5. Istanbul was a great city.
6. Turkey "went modern."
7. Asia Minor was part of the Roman Empire.
8. The Turkish Empire grew.
9. Turkey is now much smaller than it once was.

A colored map. On a blank or free-hand map, color lightly all the land once owned by the Turkish Empire. Outline clearly the land now owned. Show Istanbul, the Straits, Ankara, Adana, Taurus Mountains, coastal plains, our railroad journey.

Prosperity. Turkey is now a poor country. If they get rich, will they buy more or less goods from other countries. Explain.

CHAPTER SUMMARY

Your study question. Prove that Persia and Turkey are "Between Lands."

Interesting places. Make a list of places in Persia and Turkey; as, Tehran, Kurdistan, Istanbul, Straits, etc. Exchange lists, and see if your classmates can write something of interest or importance beside each name.

Blindman's buff. "I am in a beautiful garden, where fruits and flowers are like jewels. All around is bare and brown. Where am I?" "I am in a little stone house high on a plateau. It is cold, but there is no wood for fire. I am glad the sheep and donkeys are in the room to keep me warm. Where am I?" Let each member of the class make a picture like one of these, and see if the class can find the "blind man."

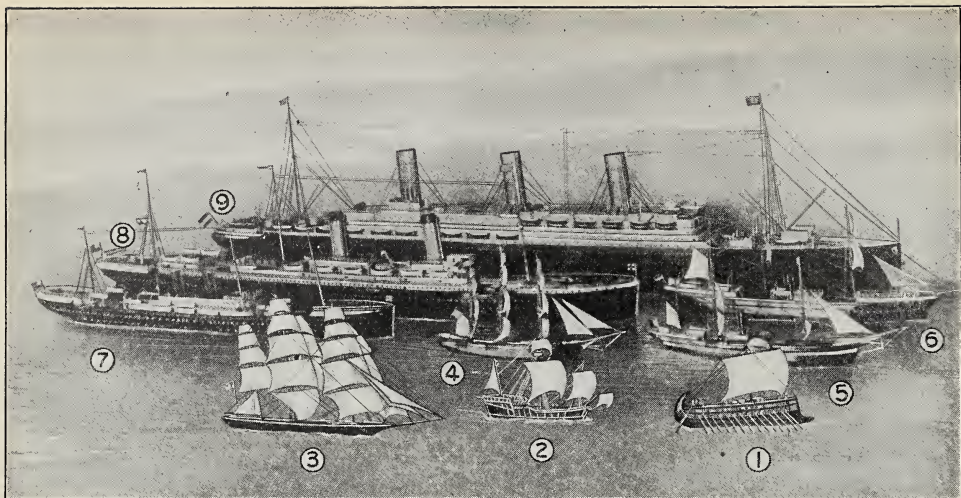



Fig. A. This picture shows how ships have changed since the time the Phoenicians sailed the Mediterranean. (1) A Phoenician ship. (2) The *Santa Maria* of Columbus. (3) One of the famous American clipper ships. (4) A square-rigged sailing vessel. (5) An early type of combined sail and steamboat—about 1820. (6) A modern coastwise freighter. (7) (8) (9) Small, medium, and very large ocean liners.

THE MEDITERRANEAN COUNTRIES

 Find the answer. As you study this chapter, find the answers to these questions: Why are several countries treated in one chapter? How does the Mediterranean climate make exports? How does it make travel? How does it affect manufacturing? How does the coal question in Mediterranean countries affect their foreign trade? Is any Mediterranean country as much alike in all its parts as is Iowa? Will there be much immigration from other parts of the world to the Mediterranean countries?

A GEOGRAPHIC INVITATION TO BECOME CIVILIZED

A block of tin tells a tale. A few years ago some men were digging a foundation for a building in a city on the south coast of England. The earth was very soft, so they dug down and down to find a firm foundation. After going down for many feet, they came to something that seemed like a floor of strong oak planks. It was the deck of an old ship. The place where the city stood had once been a harbor. The ship had sunk in the

harbor, and the harbor had been filled by mud brought by streams. The men cut through the deck of the sunken ship and found that the ship was still loaded with blocks of tin.

The writing on the blocks of tin in the old ship buried beneath the English city showed that it was a Phoenician ship. Phoenicia was a name given before the time of Christ to the country along the east end of the Mediterranean Sea, where we still find the cities which we call Tyre and Sidon, cities built long, long ago by the Phoenicians. The Phoenicians were great traders. Caravans from Iraq and Central Asia came through the gates of their cities, bringing goods from the Far East. Ships sailed from Phoenicia to trade with many countries along the shores of the Mediterranean. They even went out into the Atlantic and up to England to get tin; this trade in tin from Britain was one of the early trades of the world.

How did it happen that the Phoenicians



Photo by Courtesy Italian Tourist Information Office

Fig. A. One of the warm protected nooks along the Mediterranean about which you will read in this story—the beautiful island of Capri.

became great sailors so long ago? We may say that the Mediterranean lands invited men to do a number of things.

The Mediterranean invited sailors. It was easy for these people to have ships, because mountains once clothed with forests stand near the sea in every Mediterranean land except Egypt. The timber necessary for boats could easily reach the sea, and the sea has no tides.

In those days, Phœnician boats were small and could sail only with the wind, or when men propelled them with oars. The compass had not yet appeared. Therefore men dreaded to go out of sight of land.

Look at the map of the Mediterranean. See how a boat could follow the shore from Egypt to Phœnicia (the coast of the present Palestine); thence to the coast of Asia Minor; then from island to island over to Greece; and from Greece to Italy, from Italy to Sicily, from Sicily

to Spain, and return by way of North Africa.

What was there for the ships to carry? Caravans brought goods to Tyre and Sidon from the Far East; the workers of Tyre and Sidon, fed by farms along the Mediterranean shores, made beautiful cloth and other things, and sent them abroad in ships.

Trade and settlements. The early sailors from Phœnicia, and, later, those from Greece, visited all the lands along the Mediterranean Sea. The Phœnicians made settlements in North Africa; the early Greeks made settlements from the Black Sea to Spain. There was much trade passing back and forth from peninsula to peninsula, and from islands to mainland.

How long were these journeys? With Figure 52-A before you, make a list for your notebook of the countries that touch the shores of the Mediterranean

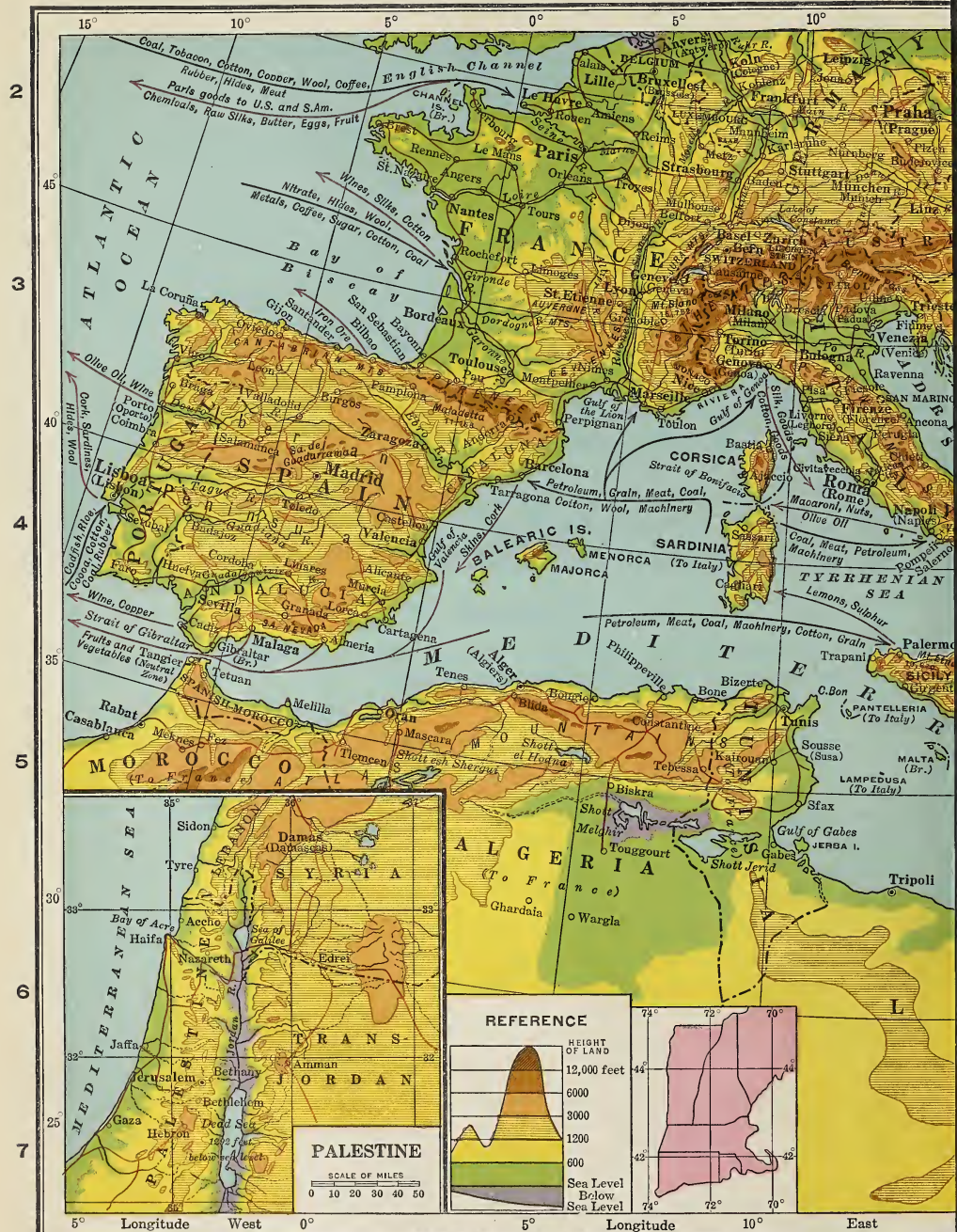


Fig. A.





© Ewing Galloway

Fig. A. One of the most beautiful sections of the Mediterranean shores is the small country of Monaco (Fig. 52-A [Q-3]). The Prince of Monaco was very much interested in exploring the floor of the ocean. He built the Museum which you see on the point of land to contain the things which he found. See the Casino of Monte Carlo at the left; the harbor where the ship lies; and the terraced hillsides.

Sea. You might begin with Spain, unless you prefer to begin with Turkey. Compare your list of the border countries with the lists of your classmates. Invent some way of measuring the extent of the Mediterranean lands on a map of the United States.

Write the names of the five largest Mediterranean islands in your notebook. Write a sentence to tell a fact about the smaller islands.

Protected nooks. Examine Figure 52-A. What is the elevation of the land near the north shore of the Mediterranean Sea? the Black Sea? Which of these could be taken more easily by nomads from Central Asia?

It takes generations of time for a group of nomads to settle down and build a civilization, with farms and workshops, roads and ships, traders and bankers, schools and libraries, cities and judges. The Mediterranean shores offered many safe, sheltered nooks where people could

remain undisturbed. This gave them the time necessary for doing important things. For example, it was on the island of Crete, safe from the roaming nomads of Asia or southern Europe, that a great civilization arose, four thousand years ago.

The Greeks, living in little sheltered valleys protected on one side by the mountains and on the other side by the sea, were left undisturbed; and therefore were able to reach their wonderful state of civilization 2400 years ago.

Three thousand years ago the Phoenicians had walled towns on the seacoast. When nomads, who had no ships, besieged them on the land side, the Phoenicians got into their ships and sailed away, and brought food from distant places.

Protected in sheltered nooks, the arts and learning developed in Mediterranean countries. Because the countries lay around a quiet, navigable sea, knowledge spread easily from country to country.



Courtesy the Italian Tourist Information Office

Fig. A. Certainly the Italian town of Atrani, part of which you see in this picture, is well protected by nature. See the steep cliffs in back of the town and the quiet sea in front. Notice the road carried by arches along the Mediterranean.

This was true because traders were able to go in ships from one part to another. Thus Egypt and Babylon became the schoolmasters and helped other people to become civilized.

The invitation to farmers. The Mediterranean lands invited farmers to grow crops. The climate suited, and still suits, a great variety of food plants. A dependable food supply is necessary to make or keep a civilization.

THINGS TO THINK ABOUT AND TO DO

A to-be-continued map. Find or draw a blank map of the Mediterranean countries, for your notebook or for the bulletin board. Write "1, 2, 3," etc., on the map where the following places are located. Keep a "key" to tell what the numbers stand for. Babylon, Crete, Mediterranean Sea, Phœnicia, Tyre, Sidon, Mesopotamia, Asia Minor, Greece, Italy, Sicily, Africa, Gibraltar, Tunisia.

Prove these statements. 1. The Mediterranean waters helped men to become sailors; to trade; to make settlements; to have farms.

2. Show what things protected the Mediterranean peoples from conquerors.

Take a part. Suppose you were one of the following, what interesting things might you say to one of your friends?

1. A boat builder in Greece.
2. A nomad who came to Greece with herds of sheep and cows.
3. A nomad who came near Tyre.
4. The men of Tyre when they saw the nomads.
5. A sailor from Crete returned from Egypt; from Greece.
6. A Greek sailor who had returned from Crete.

A class scrapbook. A class scrapbook on the Mediterranean countries will be interesting. Some of the class may bring letters from friends; others will have picture post cards; clippings and pictures from newspapers and magazines.

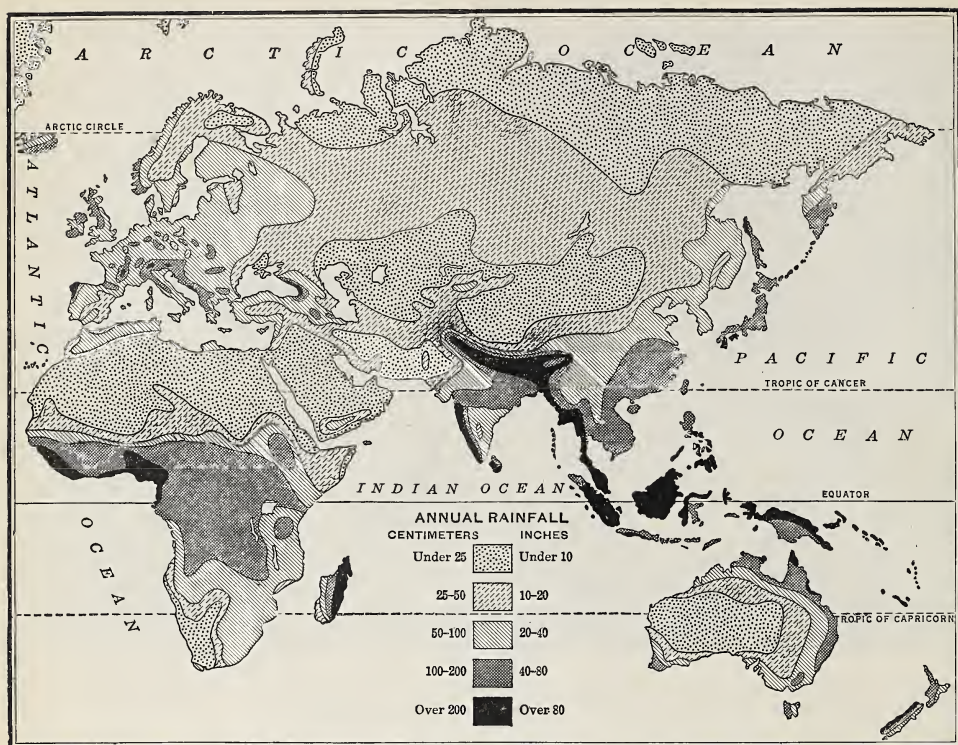


Fig. A. Normal rainfall conditions in the Old World.

THE MEDITERRANEAN CLIMATE AND SOME MEDITERRANEAN CROPS

Mediterranean countries are very much alike. No matter who rules a country bordering on the Mediterranean Sea, no matter what race its people may be, now, as 2000 or 4000 years ago, every land around its borders grows wheat and beans; every land grows olives; every land grows grapes; every land has cattle, sheep, goats, horses, and donkeys. Why is this true? Ask the climate; it will tell you.

The Mediterranean climate. You will find the same kind of dry-summer-rainy-winter weather along the Mediterranean shores in Spain, Italy, Greece, Asia Minor, Syria, Palestine, Morocco, and Tunisia.

The sea gets warm in the summer, and in winter the water does not cool off so completely as does the land (page 95). Therefore the Mediterranean shores have a winter that is much warmer than would be the case if the sea were not there. This affords a long growing season. It also makes the climate of its shores much alike, from Spain to Asia Minor and Palestine.

Since the shore lands of these countries have the same kind of climate, the same kinds of plants grow there. You now see why the farmers grow the same crops.

Therefore we need not study the climate and the crops in each Mediterranean country. Instead, we shall study the climate and the agriculture of the Mediterranean region as a whole.

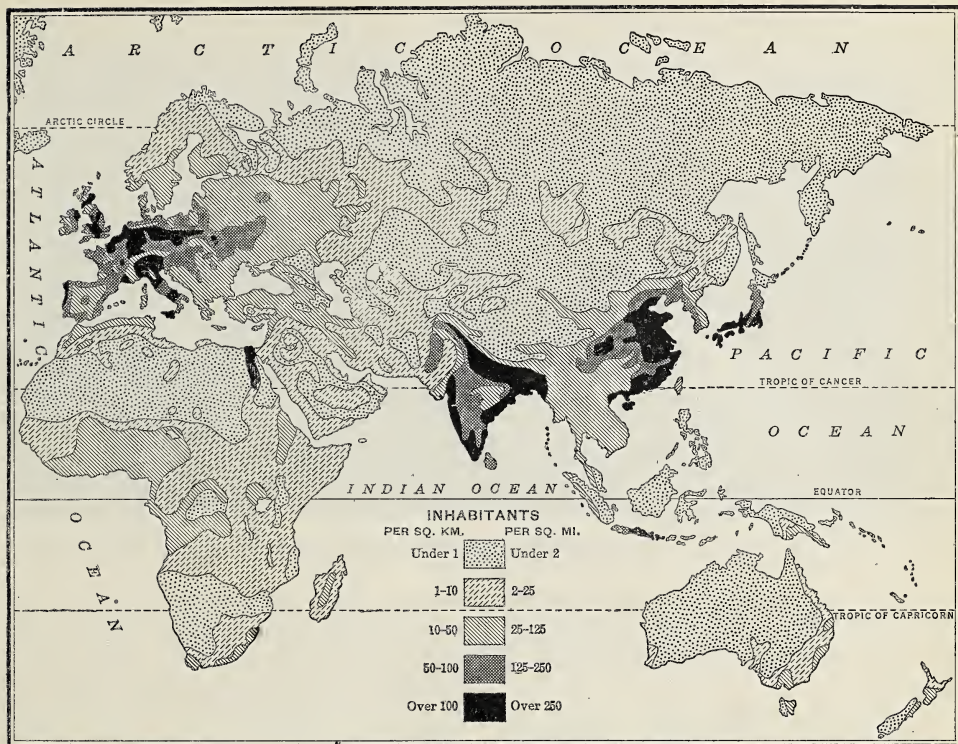


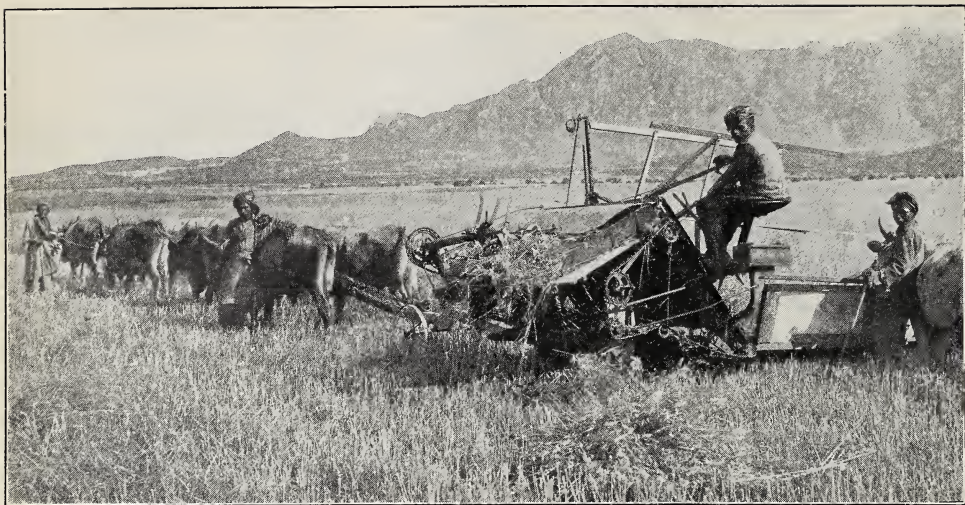
Fig. A. Distribution of population in the Old World.

Look at Figures 94-A and 95-A. What do they tell about the average temperature in January in Mediterranean lands? in July? Now look at Figure 56-A. What does it tell about the amount of rain that falls in the Mediterranean countries? The map, however, does not show that most of this rain comes in the winter time and very, very little indeed during June, July, and August. The grass, which was beautiful and green in April, turns brown in the hot and dusty summer. It is a land without forest or good summer pastures. What can a farmer grow in such a place? If you remember about California, you can tell right now a lot of things about Mediterranean crops, because the two regions have the same kind of climate, and *therefore* can and do grow the same crops.

Kinds of farming. There are four kinds of farming in Mediterranean lands:

Farming for grain and beans;
Dry-land crops of tree and vine;
Mountain agriculture;
Farming by irrigation.

Farming for bread and beans. The Mediterranean climate suits the wheat plant perfectly. Indeed, wild wheat probably first grew in this climate. The farmer sows wheat in the autumn when the rains begin. It grows like green grass through the winter. When the spring droughts come, the wheat has finished growing and is ready to send up tall stalks, which bloom and quickly ripen seed. The dry bright sunshine makes the grains fat and heavy and full of food. Since long before Roman times, the people



By Burton Holmes from Ewing Galloway

Fig. A. On the fringe of land between the mountains and the sea, Mediterranean farmers farm chiefly for bread and beans. This picture was taken in Tunisia (Fig. 52-A [R-4]). The crop which is being harvested is wheat.

along the shores of the Mediterranean have harvested good crops of wheat in May and June, and have made bread of the grain.

A little bean sometimes called the *chick pea* is also suited to the Mediterranean climate. This bean is a *legume*. You already know that legumes gather nitrogen from the air. When eaten, they give much the same sort of food value that meat gives. Legumes also enrich the soil for plants. Therefore many a Mediterranean field has a crop of wheat one year and a crop of chick peas the next year. I was much surprised to see what splendid crops of wheat were growing on the old fields of Palestine, where wheat was growing at the time of Christ, at the time of King Solomon, indeed, at the time of Abraham. This is partly because chick peas fertilize the soil.

Barley is a cousin to wheat. Perhaps you could not even tell the plants apart, or the grains. The barley plant needs less water than wheat needs. Therefore the farmer grows barley in the drier

places. Does that mean in the south, near the Sahara, or in the northern part of the Mediterranean region? (Fig. 56-A.)

What can the Mediterranean farmer do after he has harvested his wheat or barley and beans in May and June? All his land is as dry as toasted bread crust, and almost as hard as a road. The best farmer in the world could not grow corn, potatoes, sweet potatoes, or other crops that must have summer moisture, in such land.

THINGS TO THINK ABOUT AND TO DO

New ways to study. A splendid way to study a lesson is to read the lesson and then write questions about it. Here is a useful kind of question to write:

The Mediterranean lands grow large crops of (1) corn; (2) potatoes; (3) barley; (4) apples. This question, as you see, contains a sentence with a blank. Four choices are given to fill this blank, only one of which is correct. The person who answers the question correctly must choose barley.

Read the story about Mediterranean climate and crops again and write several four-choice questions. Bring your questions to class and test your classmates with them.

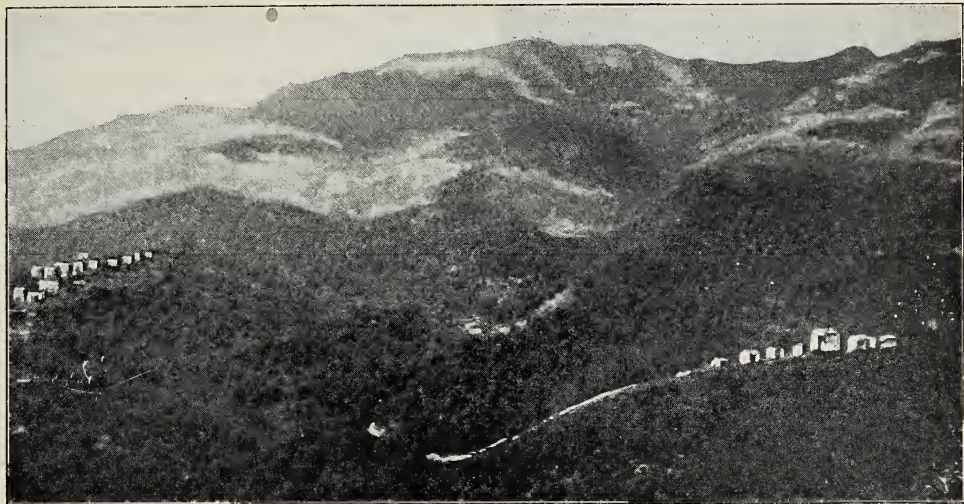


Photo J. Russell Smith

Fig. A. At the right of the picture is the village in which Toni Damiani lives. Read this page and then tell about the picture.

MOUNTAIN AGRICULTURE

TREE CROPS ON THE MOUNTAINS

Mountain rain and trees. Long ago, the people in Mediterranean lands learned how to make their mountains very useful indeed. The story of Toni Damiani will tell you about this.

Toni Damiani lives in a stone house, in a village of fifteen stone houses on the mountain side, beside a fine stone road that crosses the mountains between Firenze (Florence) and the Po Valley in Italy. Find the mountains on Figure 52-A.

Toni's father has a vegetable garden and two little fields of a half acre each, on which he grows wheat one year and beans the next. The hillside on which the village stands is so steep that the land would wash away in the hard rains if the people had not made it into steps, or terraces, that go up the hillsides like great steps that giants might climb. The grassy terrace banks hold the earth in place, and the people grow crops on the level tops of the terraces.

All together, the gardens and cultivated

fields belonging to the fifteen families of this village are only about as big as one medium-sized American corn field. A mile and a half away, on a spur of the mountain, Toni can see the gardens around the next village. Between Toni's village and the next are trees—nothing but chestnut trees. Chestnut trees are everywhere, up and down the mountains. Only very far away in the plain, distant and hazy, can Toni see any more cleared lands.

Mountain tree farms. For miles and miles, every chestnut tree on this mountain side is a grafted tree of an extra good variety, so that the tree yields many nuts of fine quality. Toni's father has fourteen acres of chestnut orchard. When I saw the playground around the village school, it was shaded by big chestnut trees.

Toni's mother has ten fine milch goats which browse on the bushes and grass beneath the chestnut trees. Toni and his sister Maria take turns herding the goats to keep them from wandering away on the mountain. Each morning and

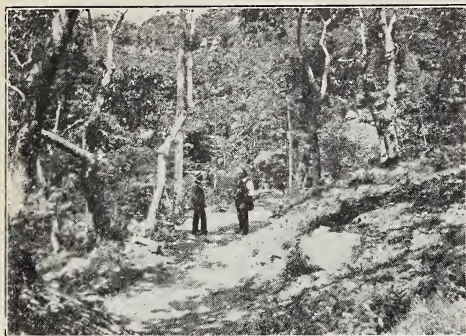


Photo J. Russell Smith

Fig. A. Mr. Damiani is talking to a friend on one of the paths through his chestnut forest.



Photo J. Russell Smith

Fig. B. Mrs. Damiani, the baby, a pig, and a goat in the chestnut forest.

each evening their mother gets a pail of goats' milk from her ten goats. The family drink some of the milk; the rest is made into cheese, part of which is put away for winter and part is sold.

Chestnut harvest. In September, Toni's father spends two weeks in his chestnut orchard cutting down with a scythe the bushes and weeds that the goats have not eaten. This makes it easy to find the chestnuts when they fall in October. October is a busy month. School closes at chestnut time, so that the children may help with the great work of the year. All day long the family is out on the hillside picking up chestnuts, and several times a day the donkey with two sacks of

nuts on his back is led down to the village.

The chestnuts are spread out, two or three feet deep, in the second story of a little stone house beside the garden. This house has cracks in the floor, through which smoke and heat come from a slow fire in the basement below. Thus the chestnuts are dried so that they will keep like wheat or corn.

After the nuts are thoroughly dry, Toni's father beats them with a stick, and the brittle shells fly off. Sometimes the dried nuts are pounded and used as we use oatmeal. Sometimes they are boiled and used as we use potatoes. Sometimes they are ground into flour. I found that bread made of chestnut flour is good food when eaten with cheese made of the milk of goats. Some of the dried chestnuts are used in the winter to feed the goats, the donkey, and the pig.

After the people have picked up all the best nuts, they turn the pigs out among the trees to have a jolly time hunting through the leaves for chestnuts. Thus the pigs are fattened before they are made into ham, bacon, and sausage for the family's winter meat supply.

By the middle of November, the chestnut harvest is over. Toni and Maria then go to school again, and their father makes furniture in his little carpenter shop beside the stone road. Some of the men in the village go away in the winter to work in the stone quarries and at road building. Some even take ship and go to South America to work in the harvest fields. They come back the next spring.

Other chestnut regions. Chestnut orchards and villages of chestnut growers are to be found on the mountains in many parts of southern Europe. There are many such in the central highlands of France, on both slopes of the Pyrenees Mountains, on the slopes of the Alps in

France and in Italy, and along the Apennines from one end of Italy to the other. Whole mountain sides are covered with chestnut orchards in the islands of Sicily, Corsica, and Sardinia, and also in the mountains of Greece and in some places in the Balkans. Ever since the time of the Roman Empire, fifteen hundred years ago, these chestnut forests have been feeding thousands and thousands of mountain people and their animals, in all the European countries that touch the Mediterranean. Can you tell something about the gullies in American corn fields?

The cork forest. The cork oak is an interesting and useful tree that grows on uplands and rough lands in the Mediterranean region. Every bit of cork that you ever saw came from this part of the world and was made from the bark of the cork oak. When a tree is well grown, the outer bark is stripped off every nine or ten years. Cork is the main crop, but the cork oak also bears acorns, and the kernels of the acorn have much the same food value as corn. Indeed, people in many countries have used acorns for bread. Bread made of acorn flour is more nutritious than wheat bread because it has more fat in it. Sometimes particularly sweet acorns are eaten in Spain and Portugal, as we eat chestnuts, but most of the acorn crop is picked up by pigs. Since corn does not grow well in the Mediterranean climate, acorns are the most important pig feed in Spain and Portugal.

THINGS TO THINK ABOUT AND TO DO

Map of mountains. Make a sketch map of the Mediterranean shores. Color all land near the shore that is more than 3000 feet in altitude.

Puzzling why's. 1. Why is Toni Damiani's house built of stone?

2. Why does Toni's father plant wheat one year and beans the next?

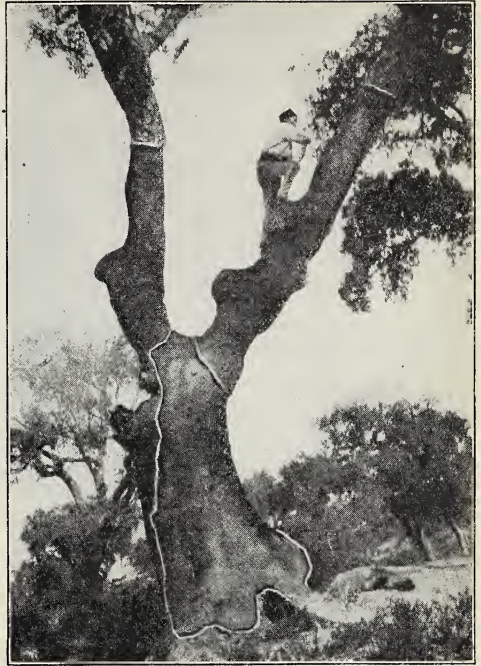


Photo J. Russell Smith

Fig. A. The tree in the picture is a cork oak. The man on the right fork of the tree is cutting cork. If you look closely, you can see the part of the tree from which the cork has been cut.

3. Why do the villagers terrace their hill-sides?

4. Why are chestnut trees and cork oak good plants for hilly farms?

5. Why does Toni's mother raise milch goats and not milch cows?

Incomplete sentences. Read again the story about mountain agriculture in Mediterranean lands. As you read, write incomplete sentences about the story, like the sentence below.

Toni Damiani's father grows and Bring ten of these sentences to class and have some other pupil complete your sentences while you are completing his sentences.

A picture puzzle. Draw a hillside such as you might see in Mediterranean lands. Show terraces, some plants growing on the terraces, and some trees growing above the terraces. Give your drawing to a classmate to write his solution of the picture puzzle.



Fig. A. Two-story agriculture. The women are hoeing beans beneath the olive trees, 700 years old, on the Spanish island of Mallorca (Majorca).



Fig. B. A branch of fruit from an olive tree. How many olives can you count on this small branch?



Photo J. Russell Smith
Fig. C. A gnarled old olive tree in the Garden of Gethsemane, said to have been growing here during the time of Christ.

DRY-LAND CROPS OF TREE AND VINE

Four good crops. The people of Mediterranean lands are fortunate because they have four good crop plants that can live through the long, dry summer, and grow and bear fruit that is good for man to use. These crops are the olive, the grape, the fig, and the almond. In every country on the Mediterranean shores you will find these crops.

The olive. The olive is a beautiful tree with small, glossy, green leaves. By saving the little water it gets, an olive tree manages to get along quite well. Its leaf is as glossy on top as though it were varnished. Only a small amount of water can escape through that kind of leaf. On the underside the leaf is covered with fine hair. This also keeps it from giving up much water.

The olive grower prunes his trees to make them shapely. He fertilizes them and plows the ground to keep down weeds that might rob his trees of water. In the autumn he picks a large crop of the little green fruit that we get in bottles at the grocery store when we ask for olives. Most of the crop the grower takes to the oil mill. There, heavy rollers crush the olives. The crushed mass is put into a press, which squeezes eighteen or twenty pounds of oil from every hundred pounds of olive pulp. This olive oil has fat—a good food. Our human bodies need fat.

In our country we get fat from cream, butter, bacon, lard, cottonseed oil, coconut oil. But to have cream, butter, bacon, and lard, one must have cows and



Photo J. Russell Smith

Fig. A. This picture was taken in Majorca (Fig. 52-A [P-4]). It shows the kind of country found near the Mediterranean shores. The whole countryside is planted with tree crops such as olives, almonds, and chestnuts.

pigs. Cows need fresh green grass; grass is very scarce indeed in the dry Mediterranean country. Pigs need corn, or foods like it, and grain is scarce in the Mediterranean countries. But the Mediterranean peoples do not need to worry about getting enough fat. The wonderful olive tree will feed them. Olive oil keeps much better than animal fats. It can be set aside in an open jar for a year and still be perfectly sweet.

The olive tree lives for hundreds of years. I have seen olive trees in Tunisia that were planted by the Romans before the Arabs conquered the country in A. D. 648, and the trees still bear fruit. I have seen olive trees in the Garden of Gethsemane, just outside of Jerusalem, that were said to have been there at the time of Christ.

The olive is an important crop in Portugal, in Spain, in the south of France, in Italy, Sicily, Morocco, Algeria, Tunisia, Greece, Palestine, Syria, and the shores of Asia Minor. This tree is more common throughout the whole Mediterranean

region than any crop tree that is grown in the United States. Everywhere olive oil is an important article of food, and in many places it is an important export.

The grape. The grape is almost as common in the Mediterranean lands as is the olive. The grapevine manages to live through the drought by having very long roots that reach deep into the ground to get the moisture left by winter rains. The vinedresser cuts off most of the top each year, so that a vine that is four or five feet high in the vineyard may be older than the man who owns it, and have a root that is ten times as long as is the part above ground. Grapes have been grown in the Mediterranean lands since Bible times. The book of Numbers (chapter 13, verse 23) tells how Caleb and Joshua and ten other men were sent into Canaan, the Promised Land, to see what kind of country it was. On their return, they brought a bunch of grapes which two of the men carried between them on a staff. There are vineyards in that very same place today. I have seen them and



Photo J. Russell Smith

Fig. A. Terraces held in place by stone walls and planted with nut trees, olives, or grapes are common in Mediterranean lands. The trees are olive. The man is standing on one of the terraces.

they bear bunches of grapes twenty-five pounds in weight.

The grape is grown in every Mediterranean country. In Spain they grow a variety which they dry in the sun and sell as raisins. They ship these raisins to all the countries of northern Europe and some come to this country. In Greece, the second export of the whole country is the dry grape which is called the *currant*. In Italy, France, and Algeria, the wine grapes are widely grown, and wine is an important crop and an important export. Wine is the chief export of Portugal and Algeria.

The fig. If you go to the store and buy a package of the best figs, you will probably find that they are called *Smyrnas*. The fig orchards in the valleys of western Asia Minor near the city of Izmir (Smyrna) produce fruit of such fine quality that for a long time it has been the chief supply of export figs in the world market. But the fig, too, is grown in many Mediterranean localities, because it is an important fruit for the home folk.

I once visited a fig farmer in the Spanish island of Majorca. His entire farm was

covered with rows of fig trees about forty feet apart. Between and under the trees he grew other crops. He had a regular system of rotating. His fig orchard was fenced into three fields. In one field he grew wheat beneath the fig trees, in the second orchard he grew clover, and in the third, beans. A flock of sheep which pastured in the clover field ate the wheat straw and the beanstalks and some of the poorer figs. This farmer sold wheat, figs, wool, and some sheep or lambs.

The almond. This delicious nut grows upon a tree which is a cousin of the peach. You might not be able to tell a peach tree from an almond tree. The bark and twigs and leaves and blossoms are much alike. The green almond looks like a small green peach. It is indeed a kind of peach having skin and seed but no flesh. The seed of the almond has a thin shell and a large sweet meat. Almonds are exported from Spain and Italy. Each year thousands of sacks of almonds come by steamers to New York, and finally find their way into millions of American Christmas stockings.

THINGS TO THINK ABOUT AND TO DO

How well do you remember? 1. Name four useful food crops which can grow through the dry Mediterranean summer.

2. In what way might the olive tree be called a vegetable cow or a vegetable pig?

3. What two products are produced from grapes in Mediterranean lands?

4. What products does the fig farmer of Mediterranean lands have to sell?

5. How can he raise such a variety of things?

Pretending. Pretend that you are a fig tree, an olive tree, a grapevine, or an almond tree growing in Mediterranean lands. Write the story of your life and the travels of your children (fruit or nuts).

Pretend that you are a Mediterranean farmer. Tell about your farm; what you grow; and what you sell. How many different kinds of farmer can you pretend to be?

IRRIGATED PLAINS AND SHELTERED NOOKS

Summer water. Toni has a cousin who lives in a village at the base of Mount Etna in Sicily. A stream flows down from the mountain and runs through the village. Most of the streams in the Mediterranean countries go dry in summer, but this stream comes from a high mountain and flows all summer. That makes it a precious stream. Every family in the village has two or three acres of nearly level land, and water enough to irrigate it. Their land is both orchard and garden. First they plant it with orange trees or lemon trees. These must have a lot of water or they cannot live. Between the orange trees and lemon trees the farmers grow early potatoes, beets, beans, lettuce, onions, and many other vegetables. They grow vegetables early in the spring, and they grow them all through the long, hot summer. Crop after crop is grown—sometimes four or five crops of vegetables, on the same land in one year, between the orange and lemon trees.

Men irrigate the land in the Mediterranean country wherever they can find a little water and a bit of land sufficiently level. One often hears in this region a creaking sound. It is the *noria*, a simple machine, by means of which a donkey or a horse walking in a circle turns a wheel that lifts water from a well or stream or cistern. The water is used to irrigate gardens. Not a drop is wasted, for there is water enough to irrigate only a fraction of the dry land.

There are hundreds of these little irrigated patches, and several large ones. The plain around Valencia in Spain, and another near Jaffa on the coast of Palestine, are famous for their oranges, which are exported to many countries.



Courtesy the Italian Tourist Information Office
Fig. A. One of the sheltered nooks along the Mediterranean about which you will read in the story. The buildings at the top of the cliff are part of Taormina—a favorite winter resort on the east coast of Sicily.

Sheltered nooks. Some winter day, when the cold wind blows from the north, go out on the north side of a house and stand still for a short time. Then go around to the south side, away from the wind, and stand in the sun. Then tell how you felt on each of the two sides of the house. This will help you to understand what a protected location is, and why some curious little sheltered nooks in the Mediterranean region are so much warmer than other places in the same latitude. Look closely at the map (Fig. 52-A). What is the elevation of the land near the shores of France and Italy, west of Genova? just back of Málaga in Spain? in that peninsula called *Krim* (Crimea) which we find in the Black Sea? along the eastern shore of the Adriatic Sea and along the northern edge of the Po Valley in Italy? These mountains shelter the land south of them from the north wind.



Fig. A. The dots show where citrus fruits—oranges, lemons, and limes—are grown in Europe.



Fig. B. Acreage planted to olives in some of the Mediterranean lands.



U.S. Dept. Agriculture

Fig. C. Production of grapes in some of the Mediterranean lands.

I have seen olive trees growing on south slopes at the foot of the Alps in Italy, but forty miles to the southward from the mountains there was not an olive tree to be seen because there was nothing to protect them from the north wind. Indeed, so warm are these little sheltered nooks that oranges are grown on the south shores of the Crimean peninsula, in places that are as far north as Augusta, Maine, or Minneapolis. This warm winter weather is also found south of the Caucasus Mountains at the eastern end of the Black Sea. The shores of the Adriatic are almost a little tropic region, and so is the beautiful

place called the *Riviera*, which extends for about a hundred miles west of Genova.

Early gardens. In all these places, spring flowers, early truck crops, and subtropical fruits are grown for shipment to northern places, just as they are in Florida and California in our own country. While Paris and London, Germany and Denmark, Norway and Sweden are cloudy and foggy and cold and frozen, the sun is shining brightly in the sheltered spots and irrigated gardens along the Mediterranean, and the stevedores are singing at their work as they load ships with boxes and barrels of fruits and vegetables at Palermo, Sicily, at Napoli (Naples), Izmir and Jaffa, at Valencia and Málaga. Then the vessel steams out through the Straits of Gibraltar, and turns north to take its cargo to the great city markets in the lands where people shiver in fog and frost.

The Mediterranean Region. You must remember that there are many countries on the shores of the Mediterranean Sea, having the Mediterranean climate along their shores and sometimes a different climate on their uplands. All of these countries grow wheat and beans, olives and grapes, and irrigate the lowlands when they can get the water with which to do it. Let us now take up the countries one by one and learn about some of the things in which Mediterranean countries differ from one another.

THINGS TO DO AND QUESTIONS TO ANSWER

The farmer's list. 1. Copy the following chart and fill in the blank columns with the names of Mediterranean products.

| GRAINS PLANTED YEARLY | TREES, VINES | MOUNTAIN TREES | ANIMALS OF FARM, ORCHARD, MOUNTAIN | IRRIGATED CROPS |
|-----------------------|--------------|----------------|------------------------------------|-----------------|
| | | | | |



Courtesy the French Line

Fig. A. The Riviera, one of the most beautiful parts of the Mediterranean shores. If you look closely, you can see that the hillsides here and there have been terraced. The terraces have vineyards and orchards.

2. Write the above products in a column. Opposite each product write the names of useful articles made from it.

A Mediterranean calendar. Copy the following chart and fill in the spaces with the farmer's work during each season of the year.

| SEASON | WHEAT FARMER | OLIVE GROWER | SICILIAN ORANGE FARMER | CHESTNUT FARMER |
|--------|--------------|--------------|------------------------|-----------------|
| | | | | |

A museum of Mediterranean products. Collect labels, pictures, wrappers, etc., of Mediterranean products used in your neighborhood. Collect samples of the real articles. Mount or display them in your classroom.

Choose an experiment. After you have done it, tell your classmates about it.

1. Calculate the age of an olive tree that was forty years old in A. D. 648.

2. Plant peas; when grown, examine the roots.

3. Visit the foreign section or wholesale-market section of your city; list Mediterranean products seen.

4. Open peach seeds; compare with almonds.

5. Collect leaves with glossy upper surface and hairy under surface; how long will they stay fresh?

New words and expressions. Use each of the following words in sentences: legume, grafted tree, terraced hillside, rotation of crops, olive mill, noria, cistern, pruned trees, gullies, sheltered location.

Some puzzling why's. 1. The farmers keep sheep and goats, but not cows.
2. They raise wheat and barley, but not corn.

3. The climate is warm, though the region is north of 40° north latitude.

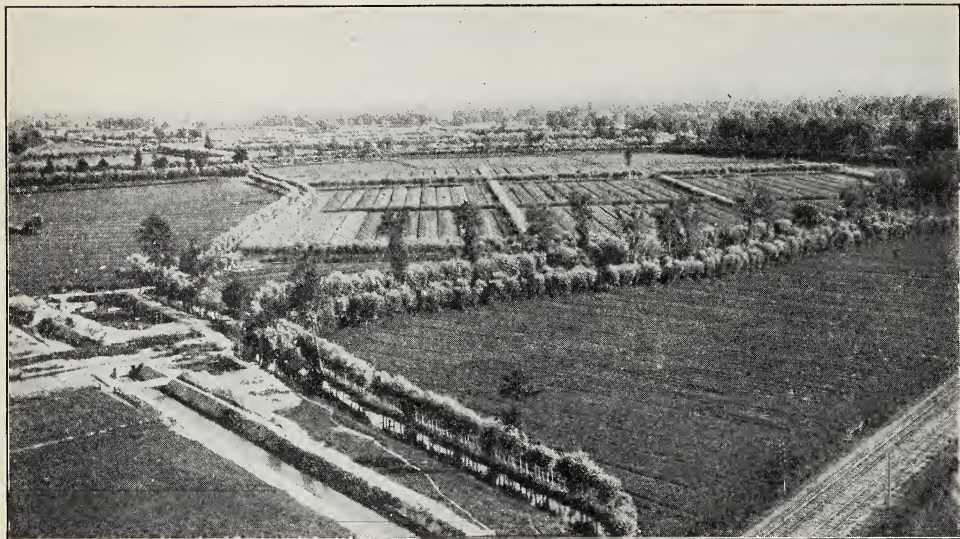
4. Pigs grow fat, though there is no corn for food.

5. The farms have no gullies, though the land is hilly.

6. School has vacation in the autumn.

7. There are juicy grapes, but no summer rain.

8. Toni Damiani's father farms in summer, but not in the winter.



U. S. Dept. Agrl.

Fig. A. The Po Valley in northern Italy (Fig. 52-A). In the foreground of the picture are irrigation ditches. The bushes which grow along the edges of the ditches are cut from time to time and used as fuel.

ITALY AND THE PO VALLEY

The Po Valley and its mountain wall.

In the plain of northern Italy you may look to the west or the north, and you see a gleaming white point, far away and far above the green trees and the haze that hangs above them. The white point is a snow-capped peak, the top of the Alps. This mountain system stands like a great wall around northern Italy, and part of its southern slope belongs to Italy. At the foot of the mountain wall is the Po Valley, the best land in Italy. Like the Great Valley of California, the Po Valley once was an arm of the sea. Like the Great Valley of California, it was filled with earth washed from the mountains. This makes nearly level land, with soft, rich soil that is easy to work.

This valley does not have the true Mediterranean climate because it gets some summer rain. It has a hot summer with much sunshine. This makes crops grow. The Po Valley has been a garden

since Roman times, and since Roman times men have been working to protect it and improve it. Swamps have been drained and banks have been built along the streams to keep them from overflowing the land when floods come. As the rivers gradually filled up their channels, men built up the banks. Rivers and men have been keeping up this race for more than 2000 years, until now we have the curious fact that in some places the rivers are the highest part of the land.

Snow water and irrigation. The snow and glaciers on the Alps melt in summer and send much water into the Po Valley. Some of the water is used for irrigation, and this valley grows more rice than any other part of Europe. In some places, by much watering the farmers grow as many as six or seven crops of hay, or they cut green grass all summer and carry it to the barns to feed their cows. By this system of green feeding, they get much more feed from an acre. This part

of Italy has a dairy industry that exports the famous Parmesan cheese to other countries.

The Po Valley is also an excellent land for winter wheat, and much of it has what we may call *two-story agriculture*: rows of fruit trees with wheat or other grain or garden crops between the rows.

Silk. Some of the trees are mulberry trees, grown for their crop of leaves. At certain seasons of the year, the leaves are gathered every day, carried to the house, cut into pieces, and spread out upon trays for tiny silkworms to eat. This careful, painstaking work is a very intensive kind of agriculture. In about thirty days the silkworms spin the cocoons. The cocoons are finally unwound in the factories to make silk thread, one of the most precious fibers used for clothing. Raw silk is one of the most important products of Italy.

Sheltered nooks at the foot of the mountains. Read again what was said about sheltered nooks on page 65, and you will understand why it is that the south side of the Alps in the winter season is a warm, sheltered place.

I once crossed these Alps in March. The north side (South Germany) was cloudy, gloomy, cold, snowy. In a day I was at the south foot of the Alps. I was in sunshine that seemed as bright as dew drops. Plants were growing, people were gardening, and every German who was on the train was talking about how wonderful the weather was. It was indeed different from that which he had left at home not far away.

Several lakes are nestled at the Italian foot of the Alps. They are called the *Italian Lakes*, and are famous for their beauty. The shores of the lakes are dotted with villages, summer homes, and hotels. Many travelers come here to enjoy the bright spring sunshine so near

to cold northern Europe, and to look at the snow-clad mountains that rise abruptly from the blue lakes.

There are terraced gardens and olive orchards on the lower slopes. Farther up the mountains are orchards of grafted chestnuts or grafted walnut trees, and above them is the forest with its work for foresters and woodchoppers.

THINGS TO THINK ABOUT AND TO DO

The map of Italy. 1. The shape of Italy is like a boot, with its heel, toe, spur, and rocks being kicked. Draw the map. Locate and name each of the larger Italian cities. Two pupils whose maps are best, may draw the boot on the board. The class may have a team race to decide which group can fill in the place names more quickly and accurately.

2. Save your map for a later exercise.

Two rivers. List the ways in which the Po is like or unlike our Mississippi. Here are some topics to help you: banks, overflow, soil, drainage, rain, temperature, fertility, length, source, glaciers.

One, two, three. List these products of the Po Valley: (1) fiber, (2) dairy product, (3) cattle foods, (4) fresh foods, (5) grains.

Beheaded sentences. Find the proper endings for these beheaded sentences. If you have time, write the complete sentences.

Cows give rich milk because

Seven crops of hay are grown because

The Po flows all summer because

Rice can be grown because

Agriculture is called two-story because

Silk can be produced because

Because: (1) there is water to flood the fields; (2) melting snows provide for irrigation; (3) mulberry trees grow; (4) snows and glaciers melt gradually; (5) crops grow under trees; (6) they are fed much green grass.

A trip. Tell what part of the Mediterranean Region you would prefer to visit. What is the reason for your choice? Tell what you would see.

Extra credit. Read something about Italy in an encyclopedia or history and be able to tell the class what it is you have learned.



Fig. A. Venezia (Venice) is built on a cluster of islands in a lagoon near the mouth of the Po River. This picture shows a water carnival on one of the "canals." The dome of St. Mark's rises in the background.

CITIES OF NORTHERN ITALY AND THE RIVIERA

The cities of the Po Valley. This valley has a string of cities: Torino (Turin), Milano (Milan), Venezia (Venice), with several smaller cities between. Torino is not far from the outlet of a tunnel that goes from Italy through the Alps to France. Milano is on the road that goes from the port of Genova (Genoa) through a tunnel to Switzerland and Germany. Milano is at the crossroads of an east-west line and a north-south line. It is a great city, larger than Cleveland, Ohio, with many factories and one of the most beautiful cathedrals in Europe.

Venezia (Venice). At the east end of the Po Valley, on some islands in the Adriatic, is Venezia, one of the cherished travel places of the earth. It was founded on some marshy islands, hundreds of years ago, by some people who wished to escape from robbers on the mainland.

The many little islands were finally covered with buildings, and the water between became streets, so when a Venezian went from house to house, he got into his boat. He does it yet. You can easily see how they got the boat habit. It was very natural for them to become sailors.

Venezia became a great trading city. At times her ships made her mistress of the Mediterranean. Her fleets of merchant vessels, with war vessels to protect them, traded at Istanbul (Constantinople), went to the Black Sea and got the products that came down from Russia, and other products that came by caravan from Central Asia and China. On the coasts of Palestine and Syria, Venezian boats loaded the produce of the caravans from Iraq, Persia, and India. They traded in Egypt, on the coasts of France and Spain, and out in the Atlantic to Holland, Belgium, England, Scandinavia. Nearly all the countries of Europe bought their Asiatic



Courtesy Italian Tourist Information Office

Fig. A. A part of the famous old Italian city of Verona (Fig. 92-A [Q-3]). The building in the foreground is the great amphitheater, built in Roman times. Notice the rolling nature of the country in this part of the Po Valley. The hills were made by glaciers long ago.

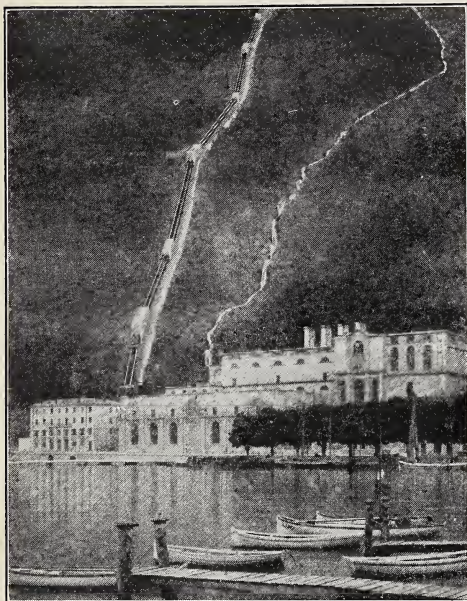
goods from Venezia. This kind of trade is called *entrepôt* trade. In the days when Venezia was this great *entrepôt* of Eastern trade, her merchant princes, her guilds of merchants and artisans, and her city government built beautiful buildings. Her bankers lent money to the princes of Europe. On her exchanges her brokers bought and sold produce and stocks as in a modern stock exchange.

One sad day the prices of stocks fell about half, and they never rose again. News had come that a Portuguese named Vasco da Gama had found a ship route to India by sailing around Africa. When the Venetian merchants and bankers heard of da Gama's discovery, they knew that Venezia would be a great *entrepôt* no more. She still stands, a city with a few factories, with her beautiful old buildings, with her high-arched bridges over her canals, with the gondoliers still gliding along the still waters of her streets. Instead of the honking horn of the automobile, we hear

the song of the gondolier. Each year hundreds of thousands of travelers visit Venezia.

Genova (Genoa). Venezia stands at the eastern end of the Po Valley, but Genova has the chief trade of the valley. When Europe began to trade with Asia by way of the Atlantic, Genova grew and Venezia stood still. When railroads came, tunnels were put under the Apennines so that ships can unload in Genova their cargoes of lumber, oil, coal, cotton, steel, grain, to be sent to the cities of the Po Valley and on to Switzerland. Genova is an important seaport. Find some American cities with about the same number of people.

White coal. The Po Valley is rich farming land, and it is also a land of manufacturing. It has water power. The snow and ice-fed streams from the Alps give water power winter and summer — *white coal*, as it is often called. Wires from hydroelectric plants in the Alps carry



© Ewing Galloway

Fig. A. A hydroelectric plant in Italy. The water enters near the top of the picture and falls through the two inclined pipes. The force of the falling water drives big wheels, called *turbines*, in the power plant below. *Dynamos*, which make electricity, are attached to the turbines.

power all over the Po Valley, so that Milano and Torino have many factories for the manufacture of cotton goods, woolen goods, and silk goods. During recent years, factories have been built in many little towns throughout the Po Valley, so that people can live on their farms and some members of the family can work in the mills, while others work on the land. Imported steel, unloaded from British ships at Genova or brought by rail through the tunnels from Germany, is used in Torino and Milano to make fine automobiles and other fine steel products.

The Riviera. The shore west of Genova is a famous sheltered nook — the Riviera — with the Alps rising steeply above the blue Mediterranean. In some places there is so little land along the sea

that it is difficult to build a road, but every little nook is used as fully as man can use it. The Riviera is thronged with people because of the delight of spending a winter or spring in this little haven of sunshine. It has hundreds of villas occupied by wealthy people from many foreign countries, including the United States. There are hundreds of hotels and every spot that is not used as home ground or playground is covered with vegetable gardens, flower gardens, and orchards which are cultivated almost as carefully as flowers are cultivated.

THINGS TO THINK ABOUT AND TO DO

A free-hand map. Add to your “boot” map of Italy the Po, the Apennines, and the Alps. Show the cities of northern Italy by dots and initials. Show the tunnels by colored lines. Write the names of the countries at the ends of the tunnels.

A trade map of Venezia. 1. On a free-hand or blank map of the Mediterranean, show by colored lines how Venezia traded with the rest of the world. Write the names of the countries at the ends of the lines.

2. Show why Venezia lost her trade after Vasco da Gama’s trip.

A word hunt. In the paragraph “Venezia,” find the words which are listed below: a rich merchant; a society of merchants; skilful workmen; a port trading between distant lands; shares in a business; people who buy and sell these shares; places where these shares are traded; a title for this trading city.

A pleasant vacation. Write or tell what pleasures you might enjoy if you could visit the Riviera. From a steamship office get illustrated booklets to illustrate your talk.

Letting a picture speak. Cut and paste in your notebook a picture of an automobile. Draw lines to the different parts (body, seats, curtains, etc.). Along each line, write the name of the raw material and how it was obtained in Italy; as, steel, through Genova, etc. Below the picture, write where the power and labor come from. How does your picture tell the story of some factories in the Po Valley?



Courtesy the Italian Tourist Information Office

Fig. A. A part of the old Italian city of Siena (Fig. 52-A [R-3]), nestled among the hills of Tuscany. In the far distance you can see the foothills of the Apennine Mountains. The *campanile* or bell tower in the center of the picture is considered very beautiful.

OTHER PARTS OF ITALY

Mediterranean Italy. South of the Po Valley most of Italy is a land of hills or mountains. The two large islands, Sicily and Sardinia, are like the mainland in having very little good level land. The mountains in these parts of Italy do not have the summer snow of the Alps. And since the climate here is *Mediterranean climate*, the many short rivers are small indeed in the summer season. The agriculture is the Mediterranean agriculture, of which we have already read (page 65).

Firenze (Florence). Firenze lies in the rich little valley of the Arno. For a long time, Firenze was the capital of the Kingdom of Tuscany, and for hundreds of years it was a city state, a rival of Venezia and Genova. In those days, rich merchants or princes often gave a present to their town hall or to the near-by church. They had a fine painting or a statue made for their town. This made business for artists, and the Italians are an artistic people. Firenze is famous today, partly

because of the work of such men as Michelangelo, Raphael, Leonardo da Vinci, Benvenuto Cellini, and other famous Italian artists, whose works we may still see in the art galleries of Firenze and elsewhere. Thousands of travelers visit these galleries each year. Firenze is also a manufacturing city. Furniture is made there in imitation of the museum pieces. Laces and jewelry are also made, and the near-by town of Fiesole is an important center for the manufacture of straw braid from which straw hats are made.

Pisa, Siena, and several smaller cities, much like Firenze, are nestled among the beautiful hills of Tuscany, and much sought by visitors.

Roma (Rome)—the goal of travelers and the capital city. I want to go again to Roma and Napoli, Spain, Jerusalem, and Istanbul. In wanting to do these things, I am like thousands of other people in America and in many European countries. Roma is chiefly important because it is a capital, and has been a capital for many



Fig. A. The part of the city of Roma (Rome) which is enclosed by the white line is Vatican City, or *Città Vaticana*, as the Italians call it. The church in the center of the picture is St. Peter's.



Fig. B. Today the traveler can walk along the streets of Pompeii, which for eighteen hundred years were buried under volcanic ash.

times as long as America has been known to Europe. Twenty-five hundred years ago it was the capital of a little state called *Latium*. Two thousand years ago it was the capital of the Mediterranean world. For centuries it was the seat of the Roman Empire. Today it is the capital of Italy.

It is thrilling to stand where Roman emperors have stood; to walk the streets that Cæsar trod; to stand in the Roman Forum, which meant so much in ancient times; to visit the Colosseum, the great Roman theater where entertainments were held; to see many, many ancient things that have come out of many centuries long gone past; to visit St. Peter's, the head church of the Roman Catholic world. Roma is indeed an Eternal City!

Vatican City. For many centuries, Roma has been what we might call the capital of the Roman Catholic Church.

In 1929, however, the Italian Government agreed with the Pope to establish a small independent country within the city of Roma, called *Vatican City*. Vatican City has an area of about 109 acres with about 650 people. The Pope lives here and from his tiny country directs the affairs of the Roman Catholic Church in all parts of the world.

Napoli (Naples). The Italians have a saying, which put into English, is "See Naples and die." The saying means that there is nothing else so beautiful in all the world. The city overlooks the Bay of Napoli, across which, in the beautiful blue distance, stands Mount Vesuvius. At the foot of the mountain lies Pompeii, a Roman city buried in A. D. 79 by volcanic dust and ashes, and recently dug out. It is almost as though the city had been put away in a museum. It shows us just how the Romans lived. The good harbor of Napoli makes her the rival of Genova as the chief port of Italy, but the absence of good water power and Italy's lack of coal, make it hard for Napoli, Roma, and Palermo, the chief city of Sicily, to keep pace with the cities of northern Italy.

THINGS TO THINK ABOUT AND TO DO

Add to your "boot" map: the places described in the story.

Those who love art. They will enjoy reading about the life and works of the artists of Tuscany. Tell the class about your readings, and show pictures of the works of art.

A picture study. Find pictures of the following and mount them in your notebooks or on the bulletin board. Vatican, Forum, Colosseum, St. Peter's, a picture by each of two Italian artists.

My choice for a home. Where would you prefer to live, in the Po Valley or in southern Italy? In answering this question, be sure to include surface, climate, water for irrigation and power, streams.

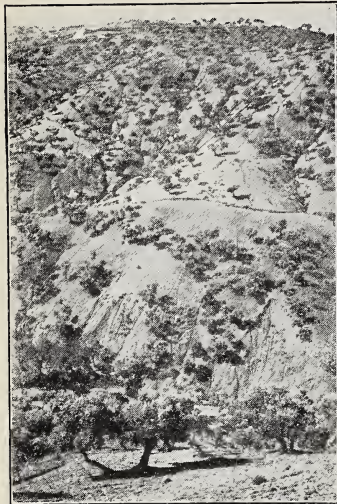


© Underwood & Underwood

Fig. A. "See Naples and die," is a well-known saying—so beautiful is the view of the volcano, Mount Vesuvius, and the city, bay, and harbor. No picture can truly show the wonderful color of the Italian sky, sea, and land. The cloud at the top of the cone-shaped peak is volcanic dust. This shows that the volcano is in a condition of gentle eruption. The volcanic peak is built up by the dust which sometimes falls on Naples so thickly that people must shovel it off the roofs to keep them from breaking.

ITALY'S PROBLEM AND THE MEDITERRANEAN PROBLEM

Some questions in arithmetic. Look in the APPENDIX to get help in answering these questions: How many people has Italy to the square mile? How many people would the United States have if she had as many people to the square mile as has Italy? How much coal is mined in Italy? in the United States? As you study this chapter, look for answers



Photos J. Russell Smith



Fig. A. After you have read this page, tell about the slopes of Mount Etna which you see in the picture above.

Fig. B. The picture at the left shows olive trees growing on a very steep Mediterranean hillside. The trees, however, are not close enough to keep the good surface soil from washing away.

to this question: Is Italy a rich country or a poor country?

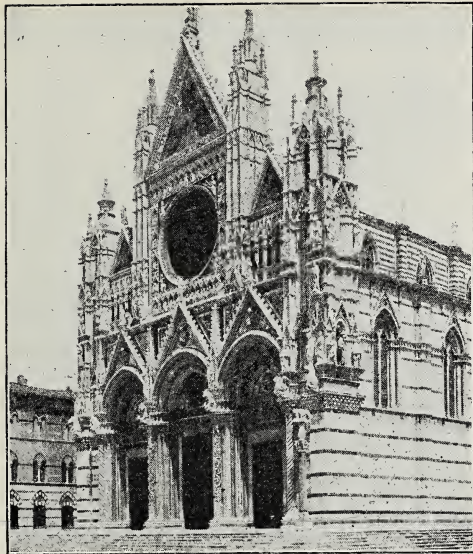
More food. Can Italy grow more crops than she does now? Remember that she has little summer rain and that only a small part of the peninsula can ever be irrigated. The mountain sides are terraced, and in pasture or in forest, to keep the soil from washing away. There are steep, rocky mountain sides near Napoli, whose forests at a distance look like common forests, but every tree is a grafted fruit tree — olive or walnut.

I have visited places on the slopes of Mount Etna in Sicily, where the farmers have the following system. The land is planted with chestnut trees. Every seventh year the trees are cut to make poles upon which grapevines are trained in the vineyards. The year the trees are cut, the farmers take their heavy hoes and spades and dig up all the ground between the stumps. They use hoes because the land is too steep and stony to be plowed. The land is then planted with rye or clover. Also, rye or clover is planted the next year. By that time the shoots from

the chestnut stumps are higher than a man's head. Most of the smaller shoots are now cut off and tied in bundles to be used as fagots for the baker's fire, or carried on muleback to the towns several miles away. The larger shoots are left to grow five more years to make another crop of poles to support grapevines.

This is an example of intensive agriculture — much labor for little result — which the Italians must follow in order to get as much as possible from their scanty land. These things explain why the Italian Government is striving to get more land ready for its ever-increasing population. In 1930, Italy put into operation in the Po Valley a new system of irrigation canals 800 miles long. In 1931, the government started a plan of draining swamps, irrigation, and terracing that will take fourteen years of work and cost \$80 an acre, for five million acres of land.

Fisheries. Italy has a long seashore, but for some reason the Mediterranean is not rich in fish, and Italy imports much dried codfish from Denmark, Newfoundland, and Norway.



By Burton Holmes from Ewing Galloway

Fig. A. The remarkable façade, or front, of the cathedral at Siena, Italy.



© Underwood & Underwood

Fig. B. "Moses," by Michelangelo, the greatest of the Italian sculptors.

These two pictures show how the Italians have used their beautiful marbles in the building of churches and the carving of statues.

Emigration. For many years before the World War, several hundred thousand Italians emigrated each year to the United States, to the Argentine, and to other countries. But in 1924 our immigration law greatly checked immigration to this country. Some Italians emigrate to Tunisia, to France, and to other parts of Europe.

Manufacturers and trade. Can the Italians make their living by manufacturing? The government is trying hard to help new manufacturing industries, but manufacturing takes power. About one half of Italy's coal supply is brought by ship two thousand miles from England. Some comes by rail under the Alps from Germany. Italy has almost no oil except what she imports. At present, over four fifths of Italy's power supply comes from waterfalls, but the absence of summer rain means that most of the streams outside the Po Valley have little or no water in summer. Unfortunately, Italy's water

power is so nearly all in use that only the poorer sites remain. For this reason, the cost of building a plant of given power has doubled within six years.

To make matters worse, Italy has almost no iron, no cotton, and little wool. Most of her lumber comes from Yugoslavia and Austria. So you see that her manufacturing is nearly all done with imported raw materials, and the manufacturing is done by people who buy imported food. Most of her exports are raw silk, manufactures of cotton and silk, rayon, fruit and vegetables from her garden spots, and some machinery of fine quality.

There is some export of minerals because Italy has some very fine marble from which most of the world's best statuary is made. Not long ago, Sicily supplied most of the world with sulphur, but now her market has been reduced by cheaper sulphur from the mines of Texas.



© Ewing Galloway

Fig. A. Air view of a part of Istanbul (Constantinople). The water where the ships lie is the "Golden Horn."

Many countries much alike. The other Mediterranean countries are much like Italy. They have so many people and so little land that all except Algeria and Tunisia must import breadstuffs some years or every year. There is very little coal and little water power, except along the Alps and the Pyrenees. Not long ago, Istanbul, one of the great cities of Europe, did not have a single smokestack. Thousands of her people were busy at manufacturing, but they were doing most of it by hand in their homes or little shops, as manufacturing was done in the United States a hundred years ago. This happened partly because coal was scarce and partly because the present Turkish government does not want foreigners to come and build factories.

Istanbul (Constantinople). Located on the hills overlooking the winding Bosphorus, Istanbul is often called one of the most beautiful cities in the world. It has a good location for trade, because it is at

the connecting place of two seas and the meeting place of two continents. It has been a splendid city since the days of the Roman Empire. Perhaps its greatest treasure is St. Sophia, one of the head churches of the Mohammedan world.

THINGS TO THINK ABOUT AND TO DO

A subject for debate. Can Italy have many factories? Let different members of the teams discuss these questions:

1. Has Italy much raw material? (Fibers, metals, wood, etc.)
2. Has she power to run mills?
3. Has she food for factory workers?
4. Can she ship goods easily?
5. Are there near-by people to buy what she makes?

Why's for the curious. 1. Why does Italy use mules to carry goods?

2. Why does she cut down trees before they are fully grown?

3. Why is Istanbul's position good for trade?

4. Why do Mediterranean countries manufacture by hand, more than do England or the United States?

5. Why is Italy's sulphur trade decreasing?

6. Why do not Mediterranean countries trade a great deal with one another?

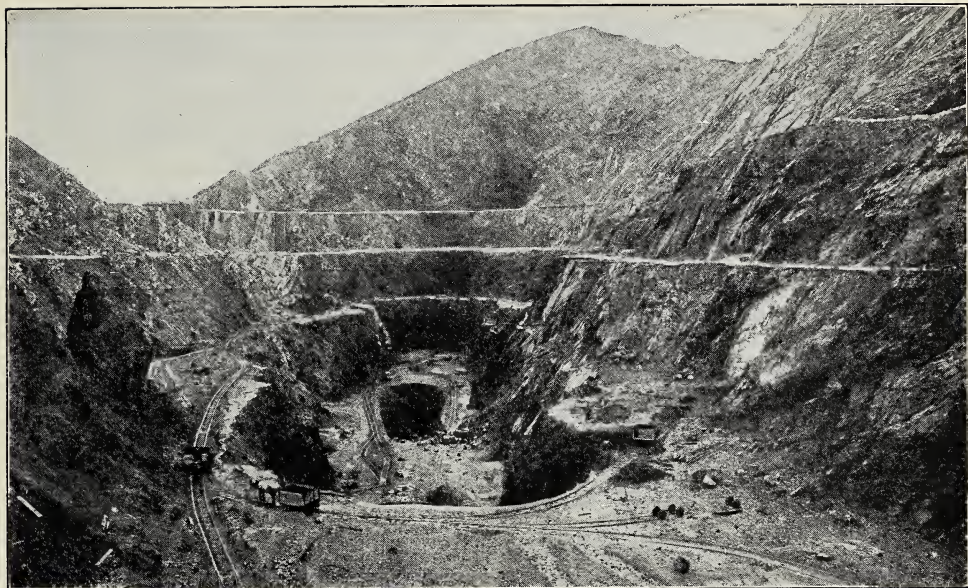


Fig. A. An iron mine in northern Spain near Bilbao. The city (Fig. 52-A [O-3]) is one of the principal seaports of Spain. Most of the iron ore goes to Great Britain.

Courtesy U. S. Dept. of Commerce

OTHER MEDITERRANEAN COUNTRIES

Spain and Portugal

Countries like Italy. Spain and Portugal are much like Italy in their resources and industries. Like Italy the two countries, which together form the Iberian Peninsula, have given much attention to manufacturing, especially since the beginning of the present century.

Spain is one of the few countries of Europe adequately equipped to build ships. Her factories also turn out locomotives, coaches, railroad equipment, textiles, and many other kinds of manufactured goods.

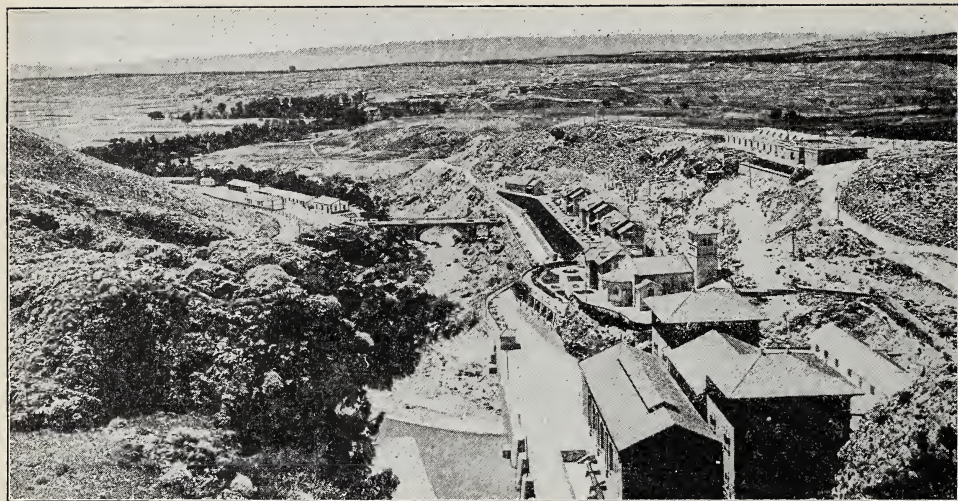
Spain is also the world's largest producer of olives and ranks third in the production of wines. The district about Valencia, where the soil is intensively cultivated, yields more rice to the acre than anywhere else in the world, beside pro-

ducing the famous Valencia orange.

A few Spanish industries are operated by foreigners, as is the Spanish telephone system by an American company. Most of the industries of the peninsula, however, are in the hands of native Spaniards or Portuguese. This is true of the great wine, olive oil, lumber, and cork industries as well as manufacturing, such as the famous textile factories of Cataluña.

The control of the larger industries is chiefly in the hands of the upper classes many of whom have become agricultural and industrial engineers in order to manage their establishments more efficiently.

Rich resources. Spain has rich copper mines, mercury mines, and at Bilbao on the northern coast there are many iron mines. The iron mines have been important so long that Shakespeare spoke of swords as *bilboes*, because of the Spanish town from which the iron ore came and still comes. Some of this ore is used in



Courtesy International Telephone & Telegraph Corp.

Fig. A. The picture gives a very good idea indeed of much of the Spanish plateau country. The land is rolling pastures with trees near the streams. The buildings at the right of the picture are a part of a hydroelectric plant.



Photo J. Russell Smith

Fig. B. A Spanish farmer taking potatoes to the Granada market in cleverly made rope sacks balanced across his donkey's back. In the distance are donkeys piled high with brushwood for kitchen fires.

the furnaces of England for the manufacture of steel rails and machinery.

The Iberian people. Spain and Portugal together make the Iberian Peninsula. The two countries are to each other very

much as are the United States and Canada. Their people are much alike. Their languages differ somewhat, but the people of Portugal and Spain do not differ from each other more than do the people in some of the different parts of Spain. Spain is a mountainous country. It has always been hard for people in one part of the country to communicate and trade with the people in other parts. The people know the part of the country in which they live, but they do not know much about *Spain*, a fact more or less true of all countries.

The people of northeastern Spain in the part called Cataluña, of which Barcelona, one of the finest ports in Europe, is the capital, have shown a tendency to think of themselves as Catalans. The people of the mountains of northwestern Spain, with equal local pride, will tell you that they are Basques. The Basque speak the Basque language which is not like any other language in the world, and there are a dozen guesses about the origin of these people and of their language. But all of



© Ewing Galloway

Fig. A. These travelers are standing on a part of the Acropolis and looking over the modern city of Athēnai (Athens). The picture shows the hilly to mountainous nature of most of Greece.

them speak and understand Spanish, their common language.

The central plateau and the northwest corner. The interior of Spain is a plateau. There the summer is very dry and hot. In winter the weather at Madrid is so cold at times that people can skate on ice, although oranges grow not far away on the coasts of the Atlantic and the Mediterranean. This cold, dry section has two great products: wheat and the great flocks of sheep that feed on the scanty pastures. These sheep are chiefly of the merino breed (Fig. 337-B). It is from these Spanish flocks that the merino sheep has been distributed to the United States, South America, South Africa, and Australia. The northwestern tip of Spain, being near the Atlantic, gets enough rain to grow a little corn.

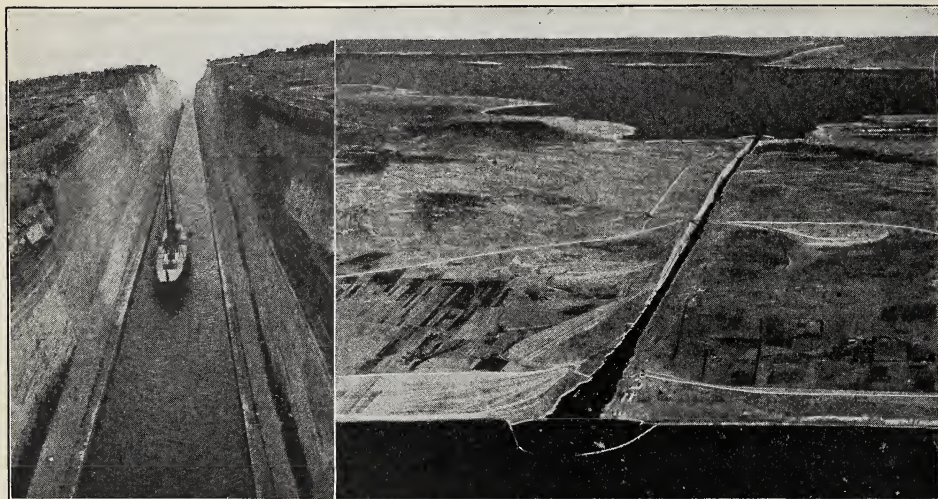
Cordoba, the capital of the part of Spain controlled by the Arabs during the most brilliant period of their rule, Granada, the last center of their Empire in the peninsula, and Sevilla are very interesting cities which travelers like to visit.

Greece

Farmers and shepherds. Most of the Greek farmers are busy with their Mediterranean crops (page 65), but I have met Greek shepherds herding sheep on the Rocky Mountains in Colorado. Why is this? Much of their home country is hilly, rocky, mountainous, and fit only for pasture or forests. Therefore a large part of Greece is a land of the shepherds with flocks of goats and sheep, and shepherds want sheep wherever in the world they go.

Government and ancient glories. Greece is a monarchy with a king. The Greeks are proud of their country's past. The ancient glories of Greece cause Peiraiævs (Piræus), the port of Athēnai (Athens), to be one of the ports of call for the dozens of ships which each year make the Mediterranean cruise, carrying shiploads of passengers on special trips to Mediterranean lands. Locate Peiraiævs on the map of Mediterranean Lands (Fig. 53-A).

A short ride in train or automobile brings the travelers from Peiraiævs to



© Sir Allan Cobham, from Ewing Galloway

Figs. A-B. Two views of the Corinth Canal which cuts the narrow neck of land near Peiraievs (Piraeus), Greece (Fig. 53-A [T-4]). In the picture at the left we are sailing through the Canal; at the right we are flying high above it. What two bodies of water do you see? Point out two small harbors made by man.

Athēnai. There, standing upon a hill called the *Acropolis*, is one of the most famous ruins in all the world. It is the Parthenon, a temple built in the great days of Greece and admired as one of the most perfect and most beautiful designs ever made by man. It was built at the time when Greek sculptors were making statues that have never been excelled; when Greek writers were writing books that we still study in our universities. Near the Acropolis are the ruins of many other buildings famous two thousand years ago. Many more buildings are being excavated. Beyond the famous ruins is modern Athēnai, a city with electric lights, trolley cars, busses, automobiles, and stores, much like any other city.

Olympic games. In 1896, a rich Greek merchant of Alexandria built a great stadium at Athēnai, and the athletes of all the world were invited to a great athletic contest, called the *Olympic Games*. The Greeks had held these games every four years in the great days of Greece, two

thousand years ago. Perhaps some of the class can tell more about these famous games.

The World War. Greece has had a great problem since the World War. The Turks who were in Greece went back to Turkey, and the Greeks who were in Turkey had to come back to Greece—a million and a half of them. This is said to be the greatest movement of population ever known in the history of the world. Most of the returned Greeks made homes on the northern and western shores of the Aegean Sea. It was these people who had made Turkish rugs in Anatolia. Now the Turks lament the loss of their rug trade because they do not have the expert Greek rug makers. Greece is now exporting some carpets and the farmers of northern Greece export what is called Turkish tobacco.

Thessalonikē. The Greek port of Thessalonikē is at the head of a gulf near the mouth of a river. There is an easy pass from this Vardar River valley over to the



© E. M. Newman from Publishers Photo Service

Fig. A. Outside and inside the famous "Street Called Straight" of Damas (Damascus) (Fig. 53-A [W-5]). As you look across the roofs of the city in the picture at the left notice the *minaret* in the foreground and the treeless hills in the distance. Look at the picture on the right and tell why you would or would not care to live on the "Street Called Straight."

headwaters of the Morava, a branch of the Danube. This Morava-Vardar Valley gives the one easy pass through the Balkan Mountains. Thessalonikē thus becomes a gateway port and has trade with several countries.

Syria

Few resources. Syria has a narrow plain along the coast, with Mediterranean climate and agriculture. Then come the mountains and beyond them is Damas (Damascus) and a wide stretch of nomad land and desert.

Good land is scarce in Syria. A traveler there sees three signs of this. One is the hillsides terraced with much labor to provide a garden. Another is the mulberry orchards that are grown to feed silk-worms. The third is the many houses — often large houses — that have been built by Syrians returned from foreign lands.

Government. The League of Nations is trying to help the countries of the world to work together, to do many things that are good for all nations, and to stop war.

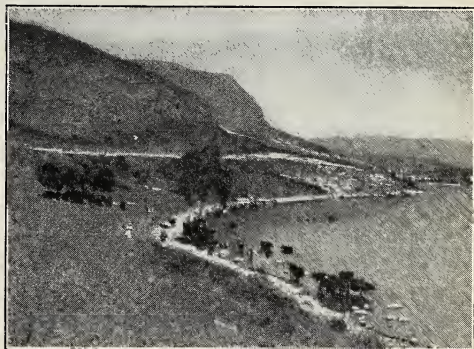
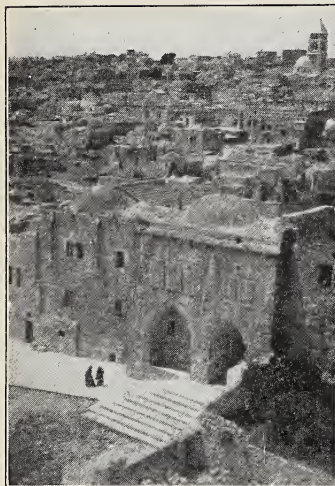


Photo J. Russell Smith

Fig. B. I snapped these cattle while they were grazing along the famous Sea of Galilee which lies on the boundary between Syria and Palestine.

One of the things it does is to take care of some weak countries. Just as a school-teacher might ask a big boy to look after a strange little boy who came to school, so does the League of Nations ask a strong country to take care of a small, weak country for the League of Nations. This is called a *mandate*. France has a mandate over Syria, and England has a mandate over Palestine.



Figs. A-B. Two views of the ancient city of Jerusalem. The picture at the left was taken from a roof near the Mosque of Omar. The picture at the right was taken from the Mount of Olives. You can see the city wall, the crowded buildings, and the nearly treeless hills in the background.

Photos J. Russell Smith



Photo Newlin R. Smith

Fig. C. Floating in the Dead Sea. How can you tell that the waters of the sea are very salty?

Palestine

You have already learned many things about Palestine: its climate (page 56), its wheat and beans (page 57), its grapes (page 63), its irrigation and oranges (page 65), and its olives (page 62).

Government. Palestine has much trouble with its government. If you ask a man in Palestine who he is, he will say, "I am a Jew," or, "I am an Arab." Most of the people in that country are Arabs. But in Bible times Palestine was the homeland of the Jews, and many people hope

that it may again become the homeland of the Jews. Many Jews have gone there since England took the mandate to rule Palestine.

Water power. Tell something about the possibilities of water power on the Jordan River, after you have noted the lakes through which it flows, the elevation of its source, and its mouth. A new hydroelectric plant, built by the British with native labor, is to send electric current to Jerusalem and many smaller places. This may start modern manufacturing in this old land.

Sacred Palestine. Palestine is chiefly interesting to us because it was the home of so many of the people mentioned in the Bible. This makes millions of people from many lands want to visit it and read about it. Many of the buildings that were sacred to the Jews are now owned by the Mohammedans. This helps to make the city sacred to three great religions. It also causes some of the trouble of governing the country.

It is Jerusalem that really should be called the *eternal city*. This old, old city



© Ewing Galloway

Fig. A. You are looking across a part of the city of Alger (Algiers). The modern city is built on the level ground by the sea, the older city climbs the steep hills behind. The Arabs compare the city to a "diamond set in an emerald frame," because of its many white buildings surrounded by green tropical vegetation.

has been destroyed seventeen times, but it is still there and it still has walls. Within the city we can see that streets have been built on top of streets as the city has been rebuilt again and again after it was destroyed by some conqueror. The *location* of Jerusalem has given it much trouble. It is on the highway from Iraq to Egypt and from Egypt to Asia Minor. If generals with armies did not set out to conquer Jerusalem itself, they often had to take it on the way to some other conquest.

North Africa—Tangier, Morocco, Algeria, Tunisia, Libya

The Arabs. You have already learned much about North Africa: its climate (page 16); its agriculture (page 25); its nomad life (page 20). The Arabs ruled North Africa for more than a thousand

years, after they conquered it in A. D. 648.

About a hundred years ago, the French began to take possession of North Africa bit by bit. Now France governs most of North Africa (Fig. 278-A). Spain has a Spanish Morocco, Italy has Libya, most of which is desert, and Tangier is governed by a committee representing Great Britain, Spain, France, and Italy. Most of the people of these countries of North Africa are Arabs, although there are large settlements of French people, and in Tunisia there are many Italian people. In the Atlas mountains there are white people called *Berbers*.

Before the French came, there were cities along the coast, but roving nomads had most of the interior. They raided and stole so much that the cities along the shore were walled cities. The French



Photo J. Russell Smith

Fig. A. Some Arabs whom I met on a good French road in Algeria. The trees are olive.



Photo J. Russell Smith

Fig. B. An olive oil mill and press in Algeria. See the handle by which the heavy stone is turned and the handle by which the press is operated.

have, to a large extent, stopped nomad stealing, built telegraph lines, railroads, roads; and now the automobile and the bus travel for thousands of miles over good roads in Algeria, Tunisia, and parts of Morocco.

When nomad stealing was curtailed, farming spread, and now Algeria is a large exporter of wheat, wine, fruit, sheep, iron ore, and olive oil.

North Africa is like Spain, with a Mediterranean climate and agriculture along the shores, and a high, cool plateau in the interior. This plateau, between the ranges of the Atlas Mountains, is nearly a thousand miles long and in some places over a hundred miles wide. Like the

plateau of Spain, it is a land of pastures. It may some day be rich in grain if the region is ever used as fully as Italy is used.

Phosphate. In Tunisia there are phosphate mines that send many shiploads of this plant food each year to the fields of northern Europe.

THINGS TO THINK ABOUT AND TO DO

A map in a square. Draw a 2-inch square for your notebook. In the square draw the map of the Iberian Peninsula. Locate the places in Spain and Portugal described in the story.

A treasure hunt. Let each pupil bring to school something that suggests a product of Iberia, Greece, Syria, Palestine, North Africa. Let opposite teams guess the products.

Grab-bag maps. 1. Draw a big map of the Iberian Peninsula on your bulletin board. On small pieces of paper write the words: merino sheep, corn, wheat, hot summers, dry plateau, cold mountains, orange groves, water power, irrigated farms, iron mines, Mediterranean crops, rainy. Mix the scraps of paper, then let each pupil select one and pin his scrap correctly on the map.

2. Do the same for Greece; North Africa.

Sketch a map of North Africa. Color differently the lands belonging to France, Spain, Italy. Show deserts by dots; mountains and plateaus by color; homes of Berbers and Bedouins by colored B's; Mediterranean climates by M.

New thoughts, new words. Perhaps you can use several of these words in the same sentence: Mandate, hydroelectric plant, bilboes, Mediterranean crops, merino breed, Parliament, Acropolis, Parthenon, Olympic Games, gateway port, League of Nations, Eternal City, troubles of government.

CHAPTER SUMMARY

A travel book. Have you thought of the parts of the Mediterranean countries which you would like to visit? You can get pictures of these places at railroad or steamship offices. Mount the pictures in a book, and beside them write why you would like to visit them.

I remember. On the board make a list of important places named in this chapter. Give each pupil a chance to choose a name and to tell something of interest about the place. Do the same for products; for countries.



Fig. A. As a result of the migration of peoples, the lands on this map which are not shaded were pretty well known before the time of Columbus. Find, on the map, a ship of the Norsemen.

PEOPLES AND CLIMATES OF NORTHWESTERN, CENTRAL, AND EASTERN EUROPE

THE PEOPLES

As you read this chapter, ask yourself the following question: "Why is Europe a continent of many small nations?"

Migrations of peoples. "From the fury of the Northmen, good Lord deliver us." For many hundred years this was a part of one of the prayers in the prayer book that was used in eastern England. Until 1914, there were church prayers in what is now eastern Czechoslovakia, asking protection from the terrible Mongols. What did these prayers mean? We shall soon see.

During the last days of the Roman Empire and after, let us say from the year A. D. 400 to A. D. 600, many great bands

of people seemed to be moving out of what is now Russia and going into western Europe. Each band had men, women, and children, horses, cattle, sheep, and dogs. Some even had wagons. The people would stay a year or more in a place, grow some crops, then move on to some other place, fighting as they went, if necessary, to get what they wanted.

Examine the map. On Figure 88-A trace a route from the Atlantic shore of Europe to Asia without crossing land that is more than 1200 feet above the sea. Point out easy routes for migrating from Central Asia to Greece, to Hungary, to Italy; to Denmark.

The beginnings of many countries. Some of these migrating people went down



Fig. A

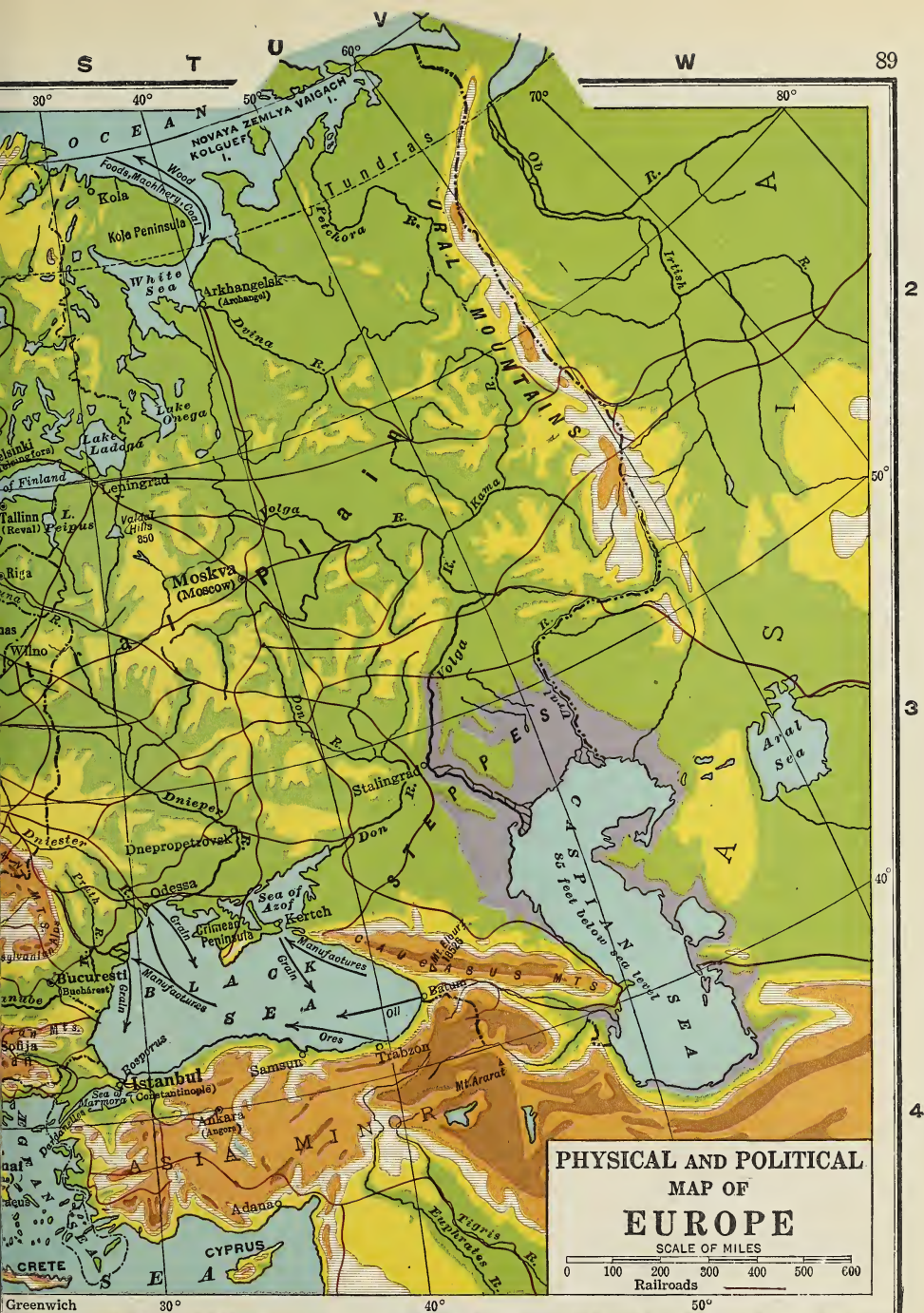


Fig. A

into Greece; some went into Italy. One tribe, the Vandals, went on through France, through Spain, across into Africa, and founded a kingdom where once was Carthage, now called *Tunisia*. The kingdom was broken up by the Arabs in A. D. 648.

Migration brought people, afterwards called *Finns*, out of Asia into Finland; Bulgars into Bulgaria; Magyars or Hungarians into Hungary. Some light-haired people, called *Angles*, *Saxons*, and *Jutes*, sailed across from the lowland of northern Germany to eastern England (Angleland). The peninsula of Denmark is sometimes called *Jutland*, the land of the Jutes. They came as pirates, but finally these pirates settled and made homes. One county in England is called *Sussex*, for South Saxons; another *Essex* for East Saxons; another part was called *East Anglia*.

Then came still more trouble for the Britons. The Northmen from Norway got into their open boats and sailed down and pillaged the coasts of England, just as the Angles and Saxons and Jutes had done. It is not surprising that the prayer book said, "From the fury of the Northmen, good Lord deliver us."

The Teutons and the Celts. When these migrations were finished, the blonde Angles, Saxons, Jutes, Northmen, and Germans, or Teutonic peoples, as these groups are called, occupied central Europe from the Alps to Norway, and from eastern Germany to England. The oncoming Teutons drove some broad-headed people, called *Celts*, to the westward. We find their descendants today in Brittany, the western tip of France, in the southwestern point of England, in Wales, in northern Scotland, and in western Ireland. There are still some people in Brittany, who were there before the Northmen came,

before the Romans came. They still speak their ancient language, and they can sail across to the point of England and the point of Wales and talk to the men there who still know this ancient language.

The Slavic peoples. To the eastward from the Teutonic peoples is a great ring of peoples called the *Slavs*. They pushed the Teutons to the westward, just as the Teutons had pushed the Celts. There were many Slavs. They separated and went in different directions. We shall soon study about them.

The Mongol horde. About the year 1238 there came out of Asia a terrible army of nomad horsemen riding out of the grasslands. They were the Mongols, often called the *Mongol Horde*, and they overran all of western Asia, most of Russia, and a part of Poland, Czechoslovakia, and Hungary. They stole and burned and killed, but in a few years they went back to Mongolia after almost destroying eastern Europe. Now you know about the second prayer that asked for protection from the Mongols. You can imagine that the boys and girls of Europe were once terribly afraid that the Northmen or the Mongols would appear to burn the village, kill the people, or carry them away as slaves. There was little security in those days.

You have already read about the last wave of people that flowed out of Asia. It was the Turks (page 11).

A continent of many nations. Two things made Europe a continent with many nations. One was, as you have just learned, that many races moved to Europe from Asia. Another reason is that European mountains, peninsulas, and islands made many places where people could live separated from other peoples. Decide from the map (Fig. 88-A) why Switzerland has three languages: French (West); German (North, East); Italian (South).

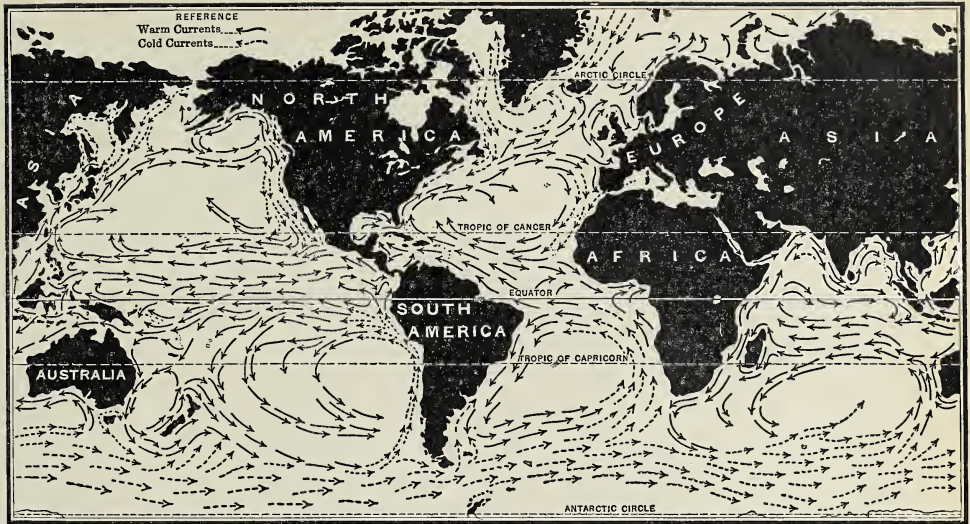


Fig. A. The courses of the ocean currents. What two kinds of currents are illustrated on the map?

THINGS TO THINK ABOUT AND TO DO

A travel map of half-savage peoples.
1. On a blank map of Europe, show by colored lines the migration of the following:

| PEOPLE | OLD HOMES | NEW HOMES |
|------------------------------------|----------------------------|---|
| a. Vandals . . . | Central Europe. | France, Spain, Tunisia |
| b. Finns | East of Ural Mountains . . | Finland |
| c. Saxons | } North Germany . . | England |
| d. Jutes | | |
| e. Northmen . . . | Norway | England, Normandy, Iceland, Greenland, Labrador |
| f. Mongols . . . | Mongolia | Russia, Poland, Czechoslovakia, Hungary |
| g. Bulgars | Central Asia . . . | Bulgaria |
| h. Magyars (Hungarians) | } Central Asia . . | Hungary |

2. Cover column 3, above. Name the country corresponding to the peoples in column 1.

3. Cover column 1. Name the peoples corresponding to the countries in column 3.

What's in a name? Here is a list of European countries or parts of countries. Find in each the name of a people who conquered or settled it. Finland, Hungary, Saxony, England, Jutland, Britain, Essex, Wessex, Angeland, Norway, Normandy, Bulgaria.

THE CLIMATES

The climate that makes men think and work. Some people just sit. Others sit and think. Others think and work. Northwestern Europe has a climate that seems to make people like to think and to work. If the weather is very hot, we want to sit in the shade and do nothing; if it is very cold, we want to sit by the fire and do nothing. If it is neither too hot nor too cold, we want to move around and do things. Northwestern Europe has a climate that is generally neither too hot nor too cold, and it seems to make men want to do things—to work, to play, to explore, to hunt lions, to climb high mountains, to go to the North Pole.

Different climates in the same latitude. Every summer, steamers carrying tourists sail from New York to Iceland. After sailing around the island, the boats go on to the northernmost tip of Europe. What cape forms the tip (Fig. 93-A)? In the same latitude the seas of North America are full of floating ice. In three centuries of trying, only one explorer, Amundsen,





Fig. A.

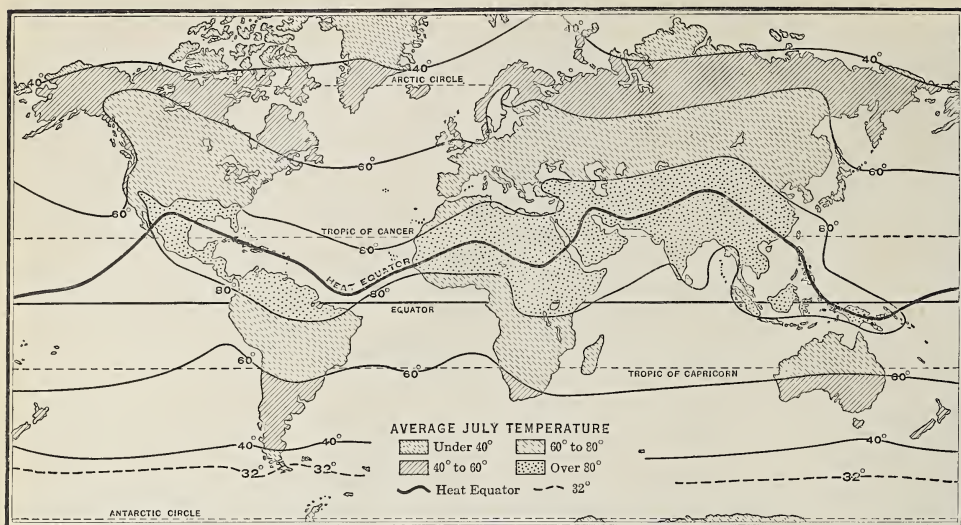


Fig. A. A world chart showing average temperatures for July. The wavelike east-west lines are called *isotherms*. Those on this map connect places having the same average temperature for the entire month. Compare the hot areas on this map and on Figure 95-A. The heat equator connects places having the highest temperatures.

succeeded in sailing around North America from Davis Strait to Bering Strait. The voyage took three years.

The Gulf Stream. What makes this great difference between western Europe and eastern North America? The answer is *winds, ocean, and ocean currents*. The Gulf Stream is a great current of warm water that flows from the tropical part of the Atlantic Ocean (Fig. 91-A). The trade winds of the Atlantic in latitude 15° N. blow a current of warm water into the Caribbean Sea. This current forces its way into the Gulf of Mexico and, like a great river within the ocean, flows out between Florida and Cuba as fast as a man can walk. It carries fourteen hundred times the average amount of water discharged by the Mississippi River. This ocean river, or stream, called the *Gulf Stream*, can be traced northward as far as Newfoundland. The prevailing southwesterly winds of latitude 40° north carry some of this warm water on past England, past Norway, and into the Arctic Ocean.

When it reaches northwestern Europe, it is still warm enough to warm the wind, and the wind warms the European land.

Labrador, in the same latitude, is so very cold that it does not have one good farm in all its wide spaces. Why?

Examine the winter-temperature map (Fig. 95-A), and then pick out a city in Iceland, three cities in North America, and three in Europe that are near the January isotherm (equal-temperature line) of 32°.

How many degrees of latitude and how many miles lie between the northernmost place and the southernmost place having a January temperature of 32°?

A warm north coast. In winter the bays along the Labrador coast are frozen over, but the harbors along the entire Norwegian coast are open because of the warm water of the eastern Atlantic Ocean, which keeps coming up from the south. Sometimes when the harbor of Arkhangelsk, Russia (Fig. 93-A, T-1), is closed by ice, the little port of Murmansk on Kola Bay in Lapland is open. A little of the warm

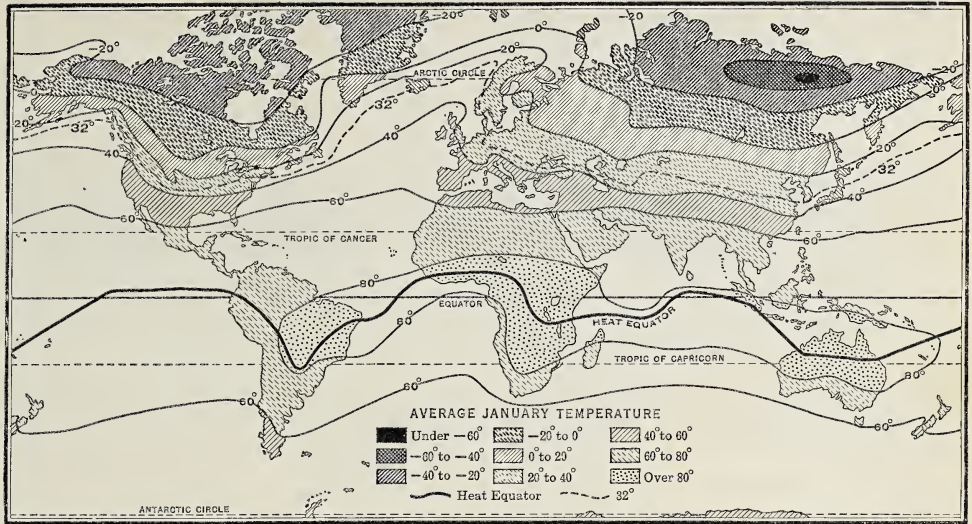


Fig. A. A world map showing average temperatures for January. What is remarkable about the location of isotherm of 32°? Find some influence of ocean currents on this map.

Gulf Stream water slips around the North Cape and keeps the ice away.

A cool summer and a mild winter. Look at Figures 94-A and 95-A. You will see that the summer is warmer and the winter is colder in the great forests of the Mackenzie Valley and central Siberia than it is in Iceland, western Norway, or the north of Scotland.

There are several reasons for this, one of which is that the stirring of the water by the wind causes the sea to be warmed to a greater depth than the land. Another reason is that more heat is required to raise the temperature of a given amount of water than is needed for the same amount of earth. Water holds heat longer, and therefore oceans and other large bodies of water are warmer in winter and cooler in summer than is the adjoining land. The west wind, warmed by the ocean in winter, gives western Europe a winter that is cool, but not cold. Does this have anything to do with Spanish oranges? In summer, when the land has

heated much more rapidly than water, this same Atlantic Ocean cools the west wind and gives the European coasts a cool summer. This makes northwestern Europe a very pleasant place for summer travel, but it is not a good place for corn and cotton, the great American crops, that need a hot summer.

Oceanic climate — continental climate. A climate like that of Ireland, western France, Norway, or western Oregon, is called *oceanic climate*, because the wind blows nearly all the time from the ocean.

A climate like that of Labrador or the Mackenzie Valley or western Siberia is called a *continental climate* because the wind blows nearly all the time from the land.

A good continent. The European land and climate both help man. First, this climate of northwestern Europe that is good for man is also good for plants. Rain falls regularly throughout the year, and crops seldom fail for want of rain. Suppose that it did not rain for a year. There

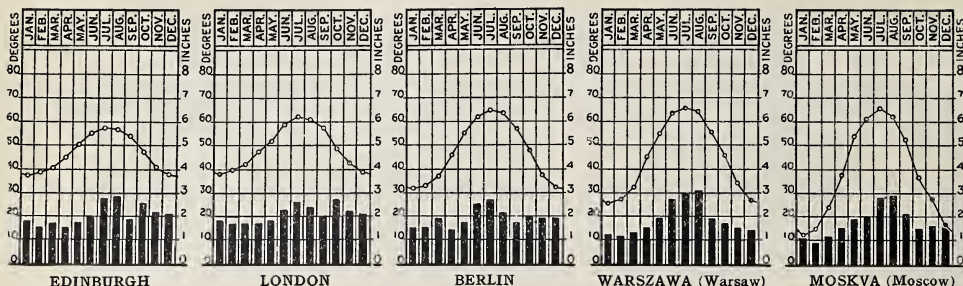


Fig. A. Normal rainfall and temperature of five cities in Europe. How many inches of rain does the graph show for Edinburgh in January? in July? What is the average temperature for January and July in London? in Moskva (Moscow)? Tell how this series of graphs illustrates oceanic climate; continental climate. What does it tell you about river navigation in January in England? in Poland? in Russia?

would be famine. Europe has fewer famines than Asia, Africa, or Australia, or South America.

Most of Europe is good for the growing of grain to give man bread. Most of it was once covered with forest. That gave man wood to build houses and to warm himself. Europe leads all the continents in the proportion of good land. Look at North America and see how much of it is too cold for farms and cities. Europe's cold area is much smaller than ours. Look again at North America and you will see that without irrigation a large part of it is too dry for farms. Europe's dry area, down by the Caspian Sea, is only about one twelfth of the entire area. That is nomads' land (page 11). North America has much land in the tropics, where it is so hot that white men have never been able to live, be healthy, think, and work, as they do in Europe. Indeed, Europe is the only continent of which nearly all is good for the white man.

THINGS TO THINK ABOUT AND TO DO

Hot and cold. 1. On a blank world map, trace in blue crayons the path of the Gulf Stream. Let \leftarrow show where the trade winds blow; let \rightarrow show where the westerlies blow.

2. Show by blue dots the ice-blocked path from Davis to Bering straits; icy Labrador.

3. Show by pink dots: the warm eastern coast of Iceland; western Norway; North

Cape; Kola Bay; Murmansk; Arkhangelsk. Explain to the class what your "hot and cold" map shows.

An experiment. 1. Put equal weights of sand and of water separately into vessels exactly alike. Place the vessel of sand over a gas flame or on a stove, and read the temperature every half minute. Do the same for a vessel of water. Copy and record the temperature every half minute as follows:

| | 1 | 1½ | 2 | 2½ | 3 | 3½ | 4 | 4½ | 5 |
|--------------|---|----|---|----|---|----|---|----|---|
| Sand | | | | | | | | | |
| Water . . | | | | | | | | | |

Which heats more quickly?

2. Let each vessel cool, taking the temperature as before; which cools more quickly?

3. Copy these sentences and complete them by filling in the blanks:

a. Winds blowing over land are in winter and in summer.

This explains the climate of

b. Such climate is called

c. Winds blowing over water are in winter and in summer.

This explains the climate of

d. Such climate is called

CHAPTER SUMMARY

Friends from the old country. Exchange class lists of ancestral homes with other classes. Do you find friends from the same countries? Add to find the numbers of families from the different countries in Europe. Write these numbers on a blank map. If you go back 1,500 years, how many of you may have had the same nomad ancestors?



Fig. A. This picture might be called "The Center of the British Empire." Across the Thames River are the Houses of Parliament, where the British Parliament meets. How can you tell that the Thames River is not navigable at this point for ocean-going vessels?

GREAT BRITAIN AND IRELAND

THE BRITISH EMPIRE

☞ Millions of people in many different parts of the world always think of the British Isles as the "Motherland." As you read this chapter, try to find why Great Britain has become the "Mother" of many nations.

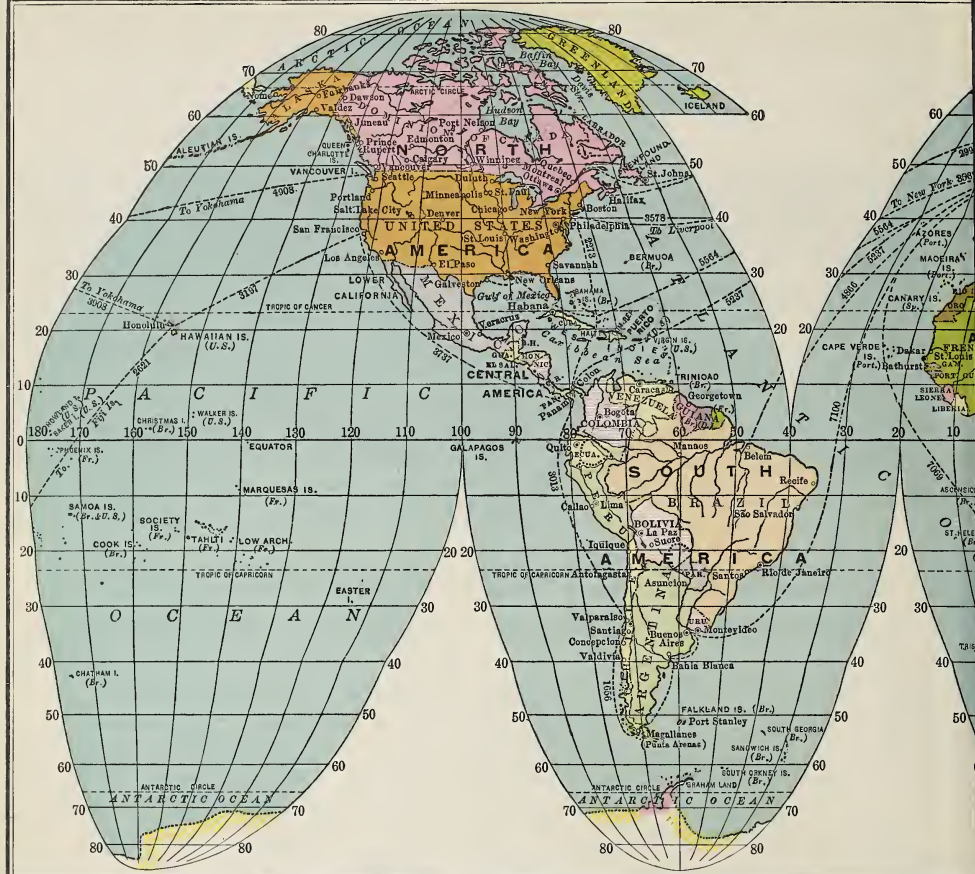
A great collection of lands. The King of England is the head of the British Empire. This empire has more pieces of land and more kinds of government than were ever before together under one ruler. The British Empire consists of Great Britain and Northern Ireland, the Channel Islands, the Isle of Man, the Irish Free State, India, the dominions, colonies, protectorates, and dependencies. In *The Statesman's Year-Book*, a book which tells something about all the countries of the world, the British Empire is put down as having three parts in Europe outside of Great Britain and Northern Ireland, 56 parts in Asia, 33 in Africa, 26 in America, 16 in Australasia and Oceania — 135 parts.

Together, the different parts of the

British Empire make up almost a quarter of the land surface of the earth, and nearly a quarter of the earth's people.

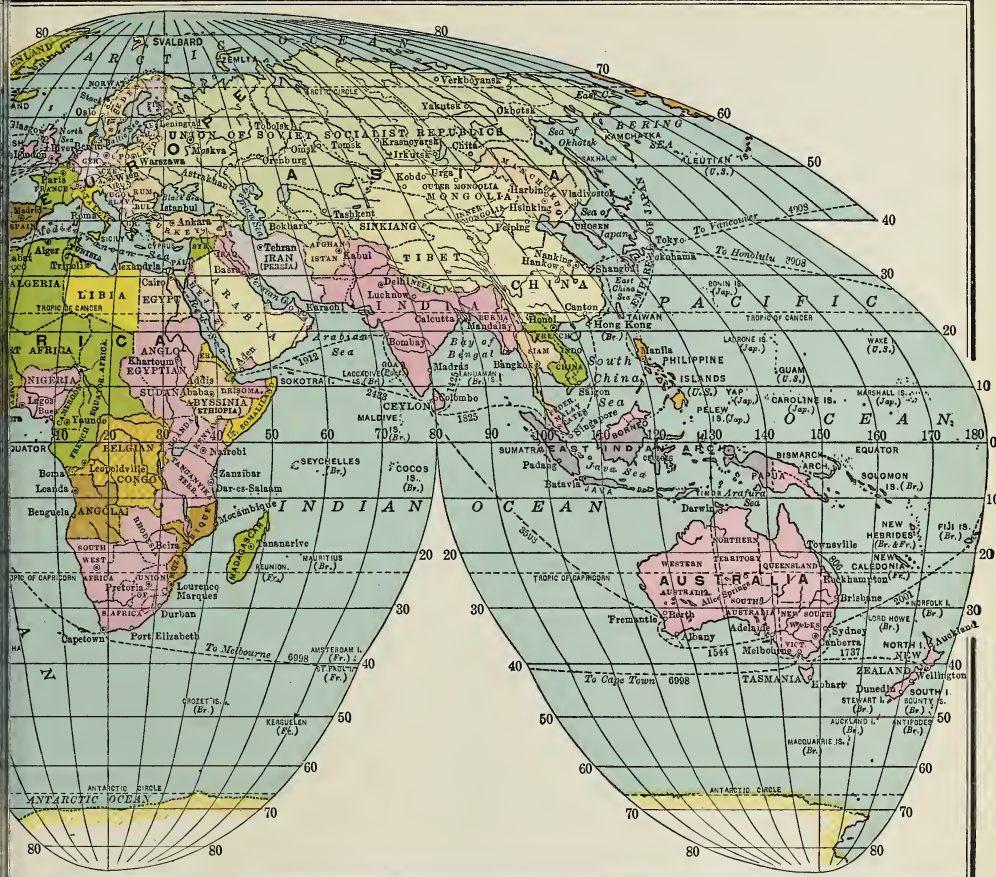
The beginnings of England. England was once a part of the Roman Empire. After the Roman legions (army) left, many peoples came across from the mainland and settled in England. They had many little kingdoms, and there was much fighting among them. A little more than a thousand years ago, the English king, Alfred, made one kingdom of the many little kingdoms, with London as its capital.

The starting of the empire. About the time of Queen Elizabeth, in the latter part of the 1500's, English sailors began to explore the shores of distant oceans, and began to trade with distant peoples. Traders soon needed stations where their ships could get fresh food and fresh water, and each station needed someone to take care of it. Thus some settlements were started. That is one of the ways in which Britain got colonies. Also, English people went out to make new homes, as they did in



The Homolosine projection by Professor John Paul Goode is an equal area projection; that is, a square inch anywhere on the map represents the same number of square miles of the earth's surface as any other square inch on the map. For this reason areas of countries may be shown upon it without error. The continents are given better form than in any other world map projection. It is greatly superior to Mercator's projection for nearly all teaching purposes.

Fig. A



The world is round, like an orange. Maps are flat, like sheets of paper. How can we show the surface of the round globe on the flat map? That is a hard problem.

The best way to get an idea of this problem is to skin an orange carefully in one piece and spread the skin out flat like the one shown here.

It is not hard to do. It shows you how the surface of a globe looks when spread out flat.

Professor J. Paul Goode made something like that with the skin of a globe when he made this map. He has stretched it a little to get it flat, but this map shows all the different countries and continents in true relative size, and more nearly in their true shape than any other flat map of the whole world shows them. That is why we use it here. It is the truest map there is—of the whole world—on one sheet.



By permission of J. Paul Goode; Copyright by the University of Chicago Press

Fig. A

North America. Sometimes an English ship captain would think that it would be a good thing for the mother country to own a certain piece of land; so he went there, put up a flag, and said, "I take possession of this land in the name of the King of England." Sometimes the English made a treaty with some African chief or the native ruler of some little island, and promised to protect him from the peoples of other countries if he would not make any treaties with them. This is called a *protectorate*. These are some of the many ways by which the British Empire grew to its present great size.

The British Government. The people of "Great Britain and Northern Ireland, the Channel Islands, and the Isle of Man," as the country with its capital at London is called, have a king. They love and respect their king very much indeed, but the British Parliament really rules the country. The Parliament makes laws, and often does so much more quickly than does our Congress. It has more power than has our Congress.

The dominions. When the British speak of *the dominions*, they mean the Irish Free State, Canada, Newfoundland, South Africa, Australia, and New Zealand. The dominions are wholly independent of one another and almost independent of England. They elect their own parliaments or legislatures and make their own laws, but they say that they are a part of the British Commonwealth of Nations, and that the King of England is the head of it. When the mother country entered the World War, the dominions helped her. Thousands of their young men died fighting for the mother country.

Other parts of the empire. Other parts of the empire are governed in many different ways. One is ruled by a man sent out by the English king (really by

Parliament). While he is there, this governor may rule some little island or colony as though he were an emperor. Another place is ruled by a naval officer, another by the officer who commands the British soldiers stationed there.

Many other parts of the empire have native rulers. Perhaps one is an Indian prince whose ancestors for generations have ruled a state the size of Connecticut or of New York. He has a court, a small army, and lives in great pomp and elegance. But some English "commissioner" or "political adviser," or "resident" has an office somewhere in or near the palace of the native ruler, and the Indian prince does as the "adviser" says. This English "adviser" is the real ruler, but he lets the native prince carry out all the laws.

Jobs and money in foreign lands. A great many people from the British Isles work in the many parts of the British Empire. Some work in the government as governors, judges, soldiers, sailors, and teachers; some are physicians in charge of public health. Many English people have saved their money and invested it in distant parts of the empire. You could scarcely find a village of twenty houses in all Great Britain where someone does not have a relative or money invested in some distant part of the empire.

THINGS TO THINK ABOUT AND TO DO

The sun never sets on the British flag.

1. On a blank map of the world, color all the lands owned or controlled by the British Commonwealth of Nations. Write numbers 1-10 on the largest areas, and write a number key below the map.

2. Write the names of the principal British islands and parts of islands.

How Britain rules. Use these words in sentences to explain how the British Empire is governed: British, protectorate, parliament, dominions, British Empire, Great Britain, governor, native ruler, resident, king, colonies, adviser, British Commonwealth of Nations.

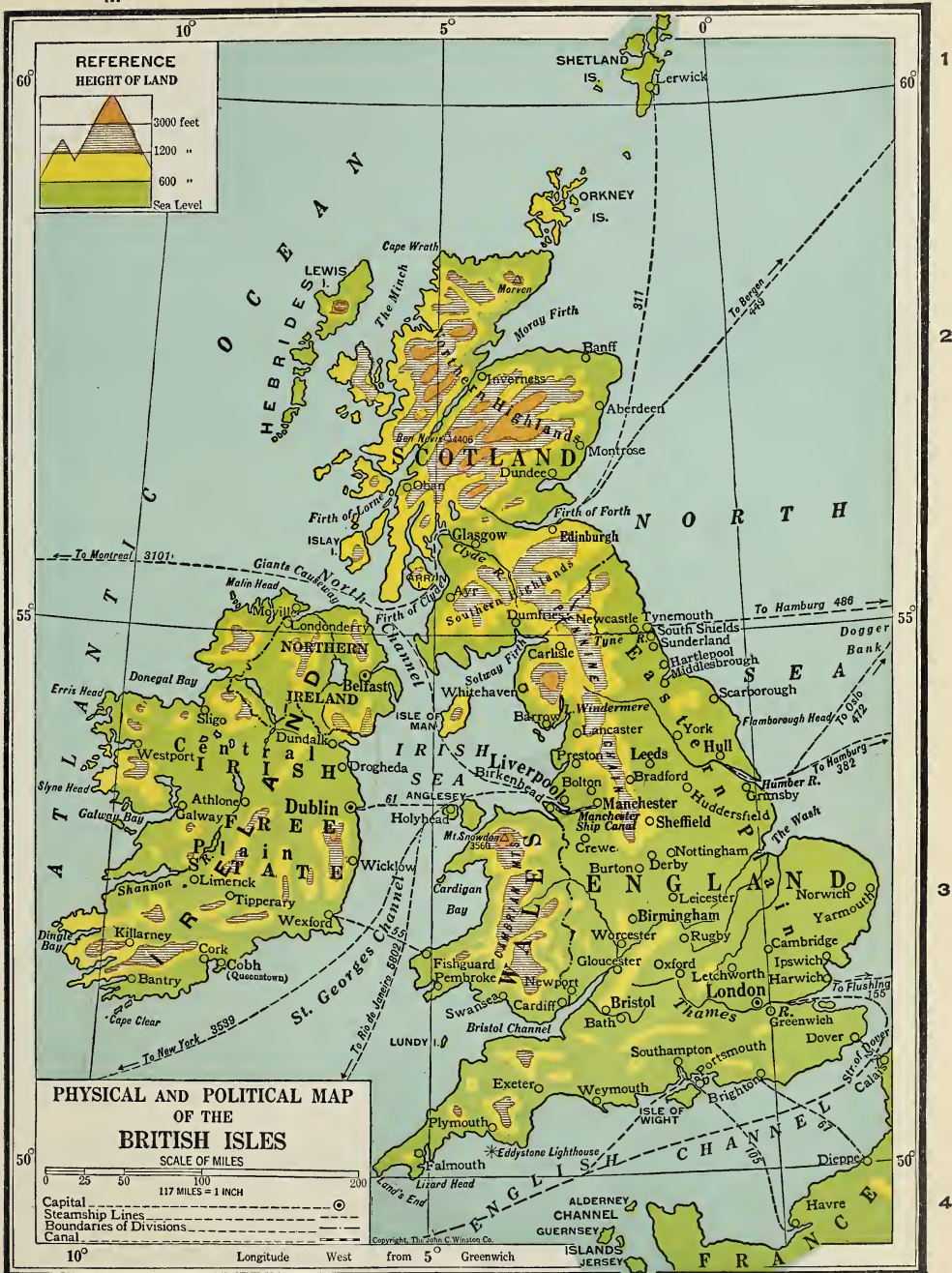


Fig. A



Fig. A. The shepherd with his dog and staff, his flock, the grass-covered hills, and the farmstead in the valley are typical of many parts of England, Ireland, and Scotland.

BRITAIN BEFORE MACHINERY

Beautiful Britain. The wind from the Atlantic blows across Britain most of the time. This brings moisture and rain; so the country is green with grass. Most of the forest has been cut, but fields and roadsides are often dotted with fine old trees, and the country is beautiful to look upon. A "right little, tight little island" its people often call it.

The English people like to live in the country. Every man who can afford it owns a country place, which he calls home, although he may spend most of his time in London or in some other city. Therefore England has many fine country homes and beautiful gardens. The King has a farm in the country as one of his homes. He is proud of his cattle and sheep.

The grass and the farm animals. For many hundred years the British were a nation of farmers. The good grass made Britain an excellent place for live stock, and the British farmers have bred fine animals and made many more different breeds of live stock than the people of other countries. British animals have been taken to every continent. Most of those in the United States are of British breeds, such as Hampshire hogs, Shrop-

shire sheep, Clydesdale horses, and Ayrshire and Guernsey cattle.

British rainfall is so regular and the grass is so good that sheep are important from the south of England to the north of Scotland. For hundreds of years wool was the chief export of England. Because of this commercial importance, the chief judge of the highest court of England has for centuries sat on a cushion of wool, which they call the *woolsack*. The British papers will say from time to time that Lord So-and-so has been "advanced to the woolsack," which means that he has become Chief Justice. He is then called *Lord Chancellor*.

The western part of the island of Great Britain is highland. Find these highlands in three countries (Fig. 101-A). Being high, near the sea, and in the path of the west winds, they get much mist, fog, cloud, and rain. The weather is so wet that the farmers find difficulty in growing grain, getting it to ripen, and harvesting it. The frequent showers, which are so troublesome to the man with a wheat field, help the grass to grow and keep it green. Therefore most of this part of Great Britain is in grass. I remember riding by automobile for forty miles northwest from



Photos J. Russell Smith

Figs. A-B. The Scotch Highlands in which Mr. MacKenzie lives. The ranch buildings are among the trees in the valley. The hills are used only for sheep pasture. At the right is one of the circular pens with stone walls into which the sheep are sometimes driven.

Manchester one summer day not long ago, and I passed only three small fields of plowed land. Everywhere was grass, grass, grass—green grass and many flocks of sheep and herds of cattle. The farmers cut a crop of hay. Sometimes they harvest a field of oats, the grain that will stand the most rain. But most of the grain used in this part of Great Britain is brought in ships from countries over the seas.

The shepherds of the British hills. "O Mother," said little Ian MacKenzie, "look at Spotty! He's herding the chickens!"

And so he was. The little black and white pup was playing in the yard and he drove three chickens into a corner between the fence and the house. There he was, keeping the chickens in the corner by walking back and forth, just as Robby, his father, and Lassie, his mother, had for years herded the flock of sheep for Ian's father.

"Ah," said Mr. MacKenzie, "he's a canny (smart) pup. He's the best pup of

the lot; we'll keep him to help herd sheep when Lassie and Robby get too old."

Mr. MacKenzie is a shepherd. I visited him on the Scotch highlands, and there he showed me their interesting way of keeping sheep. Mr. MacKenzie is one of the six shepherds employed by a sheep owner. He has charge of a "hirsle" of sheep; that is to say, as many sheep as one man can take care of, which is about 600.

This sheep ranch is on the Highlands of Scotland, farther north than the tip of of Maine. But Mr. MacKenzie has no barn except a little shed not more than twelve by twenty feet, where he can put a few mothers and little lambs on a stormy night. The sheep sleep every night of the year out on the hills. The only shelter is that of a few little circular pens with stone walls, into which the sheep are sometimes driven to keep them from wandering in a storm.

When it rains, their warm, woolly coats turn the water. It snows so little that, four winters out of five, the sheep can dig through the snow to get food from the



Photo Williams, Brown & Earle

Fig. A. Scotch Highlanders. One is dancing the famous sword dance to bagpipe music. See the mountains in the background that are common to Scotland.

rich grass and heather, a little bush that grows on these hills. Once every few years there comes a snow, then a rain, followed by a freeze which forms a crust on the snow. The sheep cannot dig through the crust to get food. Then there is a hurried scramble to haul hay and grain from the railroad miles away to feed the sheep for a few days.

These sheep are born on the hills. They live there until the farmer sends them to market. The hills are the only home they know. The sheep do not wander away, although there is no fence. Mr. MacKenzie's work is to watch the sheep every day, drive them where they need to go to get grass, and see that they do not get lost in storms. He could not do this work except with the help of a dog or two. In fact, one well-trained sheep dog can help more than two or even three men, for the dog knows what to do and can run quickly. Such flocks live the entire year out on the hills of western England,

Wales, Scotland, and even on the Shetland Islands, north of Scotland, on land that is too steep, rough, and wet to be plowed for fields.

British farmers and hand workers. The eastern part of the "right little, tight little island" is not so high as is the western part. It does not get so much rain as the western highland, but it gets enough to give good crops of wheat, barley, oats, rye, potatoes, grass, and hay. At the time of our Revolutionary War, most of the English people lived in this part of England. At that time this English farm area had thousands of little stone cottages with thatched roofs, where lived spinners and weavers, dyers, shoemakers, saddlers, and artisans who made many useful things. Each family had a few acres of ground. The people cultivated a garden, raised some crops, kept chickens, pigs, and perhaps a cow. They worked at their trades and made a little money when they were not working on their crops.

British ships and forests. Great Britain is a small island. Not all the foods that the people need can be grown there. Therefore England has always needed ships to bring many foods that would not grow in her climate. Long ago England cut down most of her forests to make room for fields and pastures. So, in the days when ships were made of wood, the British people were very anxious to have plenty of timber to make ships. Indeed, the timber of the American forests was one of the main reasons why England was interested in the American colonies. There are still trees in the New England forests that are called the *King's trees* because in colonial days a man from the British navy walked through the forest with a branding ax and made a certain mark on a tree that was good for a ship's mast. Such trees were for the King's navy.

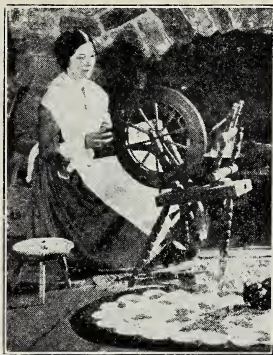
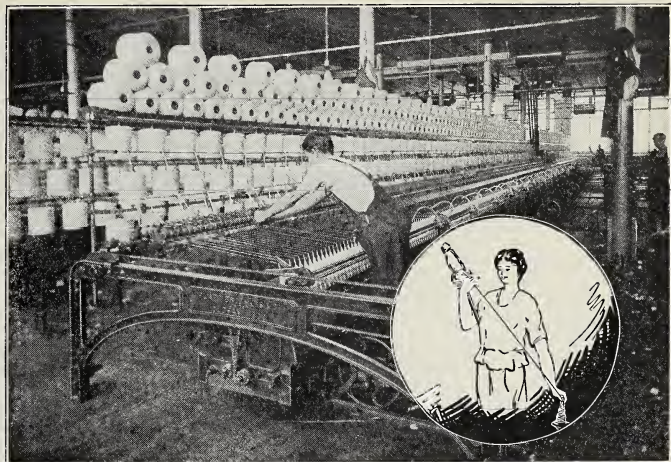


Fig. A. Spinning, old style, by use of the spinning wheel.

Fig. B. Spinning, new style, by use of large spinning machines such as you see in the picture at the right. Within the circle the girl is spinning with a distaff.



I have seen people spin that way in the Sahara and in Italian villages.

THINGS TO THINK ABOUT AND TO DO

Sheepish words. Use all of the following words in a paragraph or in a one-minute talk about sheep: hirsle, pens, heather, woolsack, live stock, bred, Shropshire, path of the West Winds, plowed lands, herd the flock, Shetland Isles.

"Because" sentences to finish.

1. The mountains get rain and fog, because
2. The live stock eat little grain, because
3. The west is mostly in pasture, because
4. Scotland seldom has snow, because
5. Scotch sheep need few barns, because
6. Crops grow in the east, because
7. More farmers live in the east, because
8. Great Britain needs ships, because
9. There are few forests in Britain, because
10. Some trees of New England are called *King's trees*, because

Modeling. Take some clay or sand and make a model of England and Wales. Show the highlands and the lowlands. Now make another model, keeping the island the same size and shape, but with differences in climate because of the differences you make in the model. Explain these differences.

BRITAIN IN THE MACHINE AGE

The coming of machinery. The cottage workers of Great Britain all used hand tools, but about the time of the Revolutionary War, someone invented a spinning machine which could be run by a water wheel. In a short time the spinner, instead of spinning at home and making one or two threads at a time and working the machine with his or her foot, stood by a power-driven machine in a *factory* and made twenty, forty, a hundred threads at one time. A weaver with a weaving machine made twenty or forty times as much cloth as the hand weaver. The regular and heavy rainfall of western England made the waterfalls, and water wheels and water-driven cotton mills near Manchester in Lancashire became very important in this new way of manufacturing cloth.

Coal, man's great helper. The steam engine was invented about this time, and the coal field then became an important place, because the coal made steam which drove the engine, and the engine drove the machines. Many factories were built,



Fig. A. Map of the British Isles showing where coal is found. If you wish to tell how useless and unnecessary some act is, you may say, "That is like carrying coals to Newcastle." What does the saying mean?

rows of houses for the workers were built near the factories, and cities grew up near the coal fields. This is called the *factory system*.

England has five important coal fields. Find them on Figure 106-A. Name a city near each field.

No other country had coal fields so close to the sea. This was very important, indeed, before the railroad came. In the last quarter of the eighteenth century, canals were built to connect Birmingham and Manchester with the coal fields and the sea. Therefore England got a good early start at manufacturing and trade.

England not only had coal, she also had iron ore. It was easy for her to become the greatest iron maker in the world. When men learned how to make ships of iron and steel, Great Britain was indeed ahead of all other countries in opportunity to trade. Not only could

she manufacture more easily, but she could build ships more easily. Her ships sailed every sea and many of them carried goods for other countries. She had the greatest navy in the world. She called herself *Mistress of the Seas*, as indeed she was. Her merchant ships carried about half the commerce of the world.

The Industrial Revolution. The change from making things by hand to making things by power-driven machinery is called the *Industrial Revolution*. It changed Great Britain greatly. In 1700, England and Wales had 5,500,000 people. In 1831, England had 9,000,000 people, and Scotland had 1,600,000. How many are there now (see Appendix)?

England is a good country for farms and crops. Her wheat fields yield twice as much an acre on the average as do those of the United States. But only one person in fourteen in Great Britain now makes his living by farming. The part of the country that is good for farming is not so important now, because so many people live in the dozens of cities that have grown up near the coal fields and near the harbors where the ships unload and load their cargoes.

The shipyard. Mary McGregor is a shipbuilder's daughter. She lives in a little stone house in Scotland, near the city of Glasgow, on the bank of the river Clyde. The Clyde is not a big stream like the Hudson or the Mississippi. Horses once used to wade across it near Glasgow. But now at that same place men have dug out the dirt and blasted away the rocks, making the water deep enough for ocean steamers to come up to the city. At many other places along the coast, the people of Great Britain have done much digging and blasting to make channels deep enough to float big ships.

From the door of her home, Mary

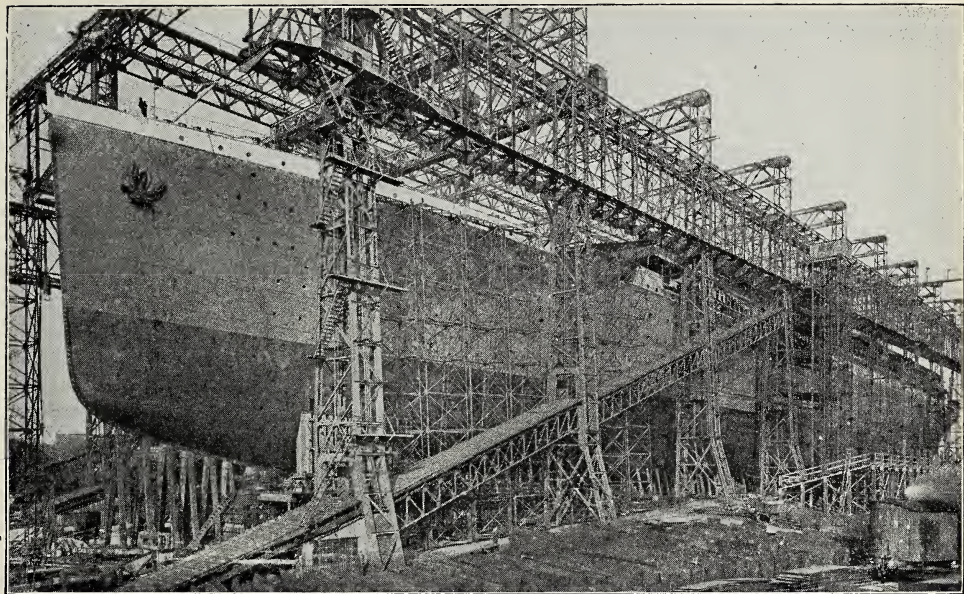


Fig. A. By far the larger part of the commerce of the world is carried in ships which fly the flag of some European nation. The picture shows a very large passenger and express steamer being built in a British shipyard. At the right, just off the picture, is a river. When the ship is nearly finished, workmen loosen blocks here and there and the big vessel slides by its own weight into the water.

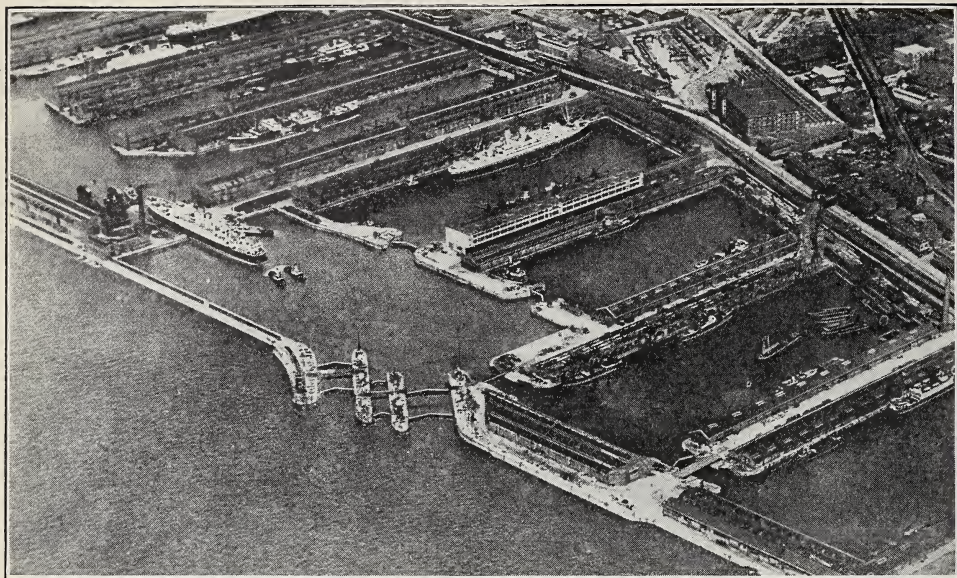
McGregor looks across the Clyde into a shipyard, where she can see the row of long ways (slides) on which ships are built. She sees ships grow, day by day, as her father and big brother and other men rivet piece after piece of steel to the growing ships. Mary can hear the noise of the dozens of hammers pounding away on the ships.

Launching and finishing. When a ship at last is finished, many people come to see it launched. Mary always goes to see those her father has helped to build. To launch a ship, the props are loosened, letting the great heavy mass of steel slide into the water, where it bobs lightly up and down. As the great steel hull glides away, a puffing little tugboat pulls it up to a long wharf. There the ship is tied fast, and for many days and weeks men are busy putting in the engines and machinery that will make this great iron

house go across the sea and carry people and goods.

Many parts of a steel ship are made in different buildings of the shipyard, and some are made in distant places. In one building the great plates for the boilers are riveted together with red-hot rivets; in another, the engines are built; in another, the great outer plates of steel are cut out and rivet holes are punched along the edges. On the ways, these sheets are riveted together over the steel framework which has come, piece by piece, from its separate building. Many machines and many workmen are needed to make the parts of ships and to put them together.

Mary's older sister works in a mill that makes thread, but Mary says that as soon as she is through school, she is going to work in a mill that makes lace curtains. There are many industries in Glasgow and the smaller towns near it on the Clyde.



© Ewing Galloway

Fig. A. An air view of a part of the harbor at Liverpool. The big ships are lying in docks which are separated from the open water by a sea wall and gates. The tide here rises and falls twenty feet. At high tide the gates are open and the ships sail into the docks. Then the gates are closed. Outside the docks the water falls; inside, it remains at the same level—deep enough to float the largest ships.

Other ship-building cities. Great Britain and Northern Ireland own more ships and build more ships than any other country in the world. During some years, one British city builds as many tons of shipping as the whole United States builds. There are shipyards in many British cities, particularly on the river Clyde, near Glasgow, on the river Tyne, near Newcastle, and at Belfast in Northern Ireland. The Danes build ships at København (Copenhagen); the Norwegians build them at Oslo; the Dutch at Rotterdam; The Italians at Genova; and the Germans at Hamburg and Stettin.

THINGS TO THINK ABOUT AND TO DO

Useful port cities. Make a list of port cities of Great Britain. Choose a port and, as its harbor master, tell the class how your port serves Britain and other countries. First show the class your port on a map. Each pupil who is harbor master should also read about his port in an encyclopedia.

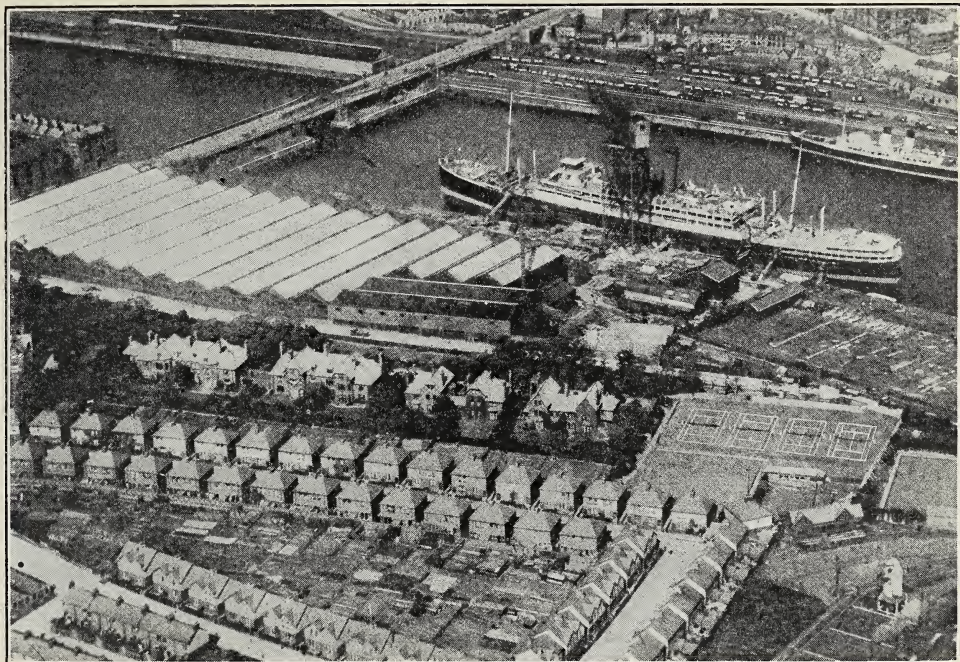
Untangle this story. Write or tell correctly the following story of the Industrial Revolution. Steam engines ran machines better than water wheels. Many people went to live near the cloth mills. Iron ships were built. They wove cloth very slowly. The steam engine was invented. Iron was mined in the coal fields. The water-run spinning wheel was invented. The cloth cities also built iron ships. Cottage workers used hand tools. Coal fields became important. Factories were built near coal fields.

New words and expressions. Use each of the following expressions in a sentence about weaving and shipbuilding: Industrial Revolution, ways, rivet, launch, power driven, coal fields, blasting, props.

Suppose. 1. Suppose you were Mary McGregor; tell the class how your father builds a great ship; where the ship will go; what it will carry.

2. Suppose you were coal, steam engine, or machinery. Tell what you have done for Great Britain.

A ship poem that you will enjoy. Find in Longfellow's "Ship of State" words or expressions found in this geography lesson.



© Ewing Galloway

Fig. A. A part of the city of Barrow, a seaport about 50 miles northwest of Liverpool, England. You should look carefully at and tell something about each of the following things in the picture: the big manufacturing plant and the railroads along the harbor where the ships lie; the workmen's houses near the plant; their gardens; their tennis courts. Why is such an arrangement good for business, for trade, and for people?

BRITISH TRADE AND CITIES

British exports. When an American tailor wishes to sell you a high-priced suit of clothes, he may tell you that he has just imported some of the finest cloth from England. Leeds and other near-by cities in the region of Yorkshire are the greatest wool-manufacturing district in the world. If an African Negro on the banks of the Congo River wishes to buy another of those ten-foot strips of cloth that he wraps about his body, he will probably ask for Manchester goods. Manchester, with a dozen smaller cities near it, is the greatest cotton manufacturing center in the world.

If an Australian or a Brazilian wishes a good pocketknife, he may ask for one made in Sheffield (England). If New Zealanders build a railroad, they will buy the

steel rails, the locomotives, and the cars from Glasgow or Newcastle. Britain exports thousands of different manufactured articles to every continent.

British food. So many people live in cities in Great Britain that the farmers can grow only a small part of the food that is needed. Shiploads of wheat come to Liverpool, Bristol, London, and a dozen other British ports. The wheat comes from New York, Montreal, Galveston, New Orleans, Buenos Aires, Odessa, or Adelaide. Almost every morning a little ship lands at Newcastle or Hull bringing butter from Denmark. Every week a ship comes in from New Zealand bringing butter. Millions of pounds of Chicago ham, bacon, and lard cross the North Atlantic to England. Cargoes of beef are



Aerofilms from Ewing Galloway

Fig. A. A very small part of the great city of London as seen from the air. How many bridges across the Thames show in the picture? Find the Houses of Parliament with "Big Ben"; Westminster Abbey.

always arriving at British ports from Australia, Argentina, or Uruguay, and cargoes of mutton come from Argentina, Australia, and New Zealand.

Raw materials. British fields can furnish only a small part of the raw materials used in all the city factories. Ships with cotton sail in from Charleston, Mobile, New Orleans, Galveston, Bombay, Egypt, West Africa, and Peru; oil ships from the Gulf of Mexico, the Caribbean Sea, the Black Sea, and the Persian Gulf; lumber from Poland, from Canada, and from the United States.

How does Britain pay for all this food and raw materials? She sells manufactured goods and she sells coal, millions of tons of it. She sends coal to Denmark, Norway, Sweden, France, Brazil, to every country on the Mediterranean, and to other countries. The coal is nearly all carried in British ships. The shipowner gets freight money for doing the job.

With this money in his pocket, he can take a lower freight on his return cargo of food and raw materials going back to Britain.

British cities. Britain has many manufacturing cities and many commercial cities. There are three great ports on the west coast: Glasgow, Liverpool, and Bristol. Southampton, on the south, is a port of call for the fast steamers going up the channel to France, Belgium, Holland, Germany. There are three on the east coast: Newcastle, Hull, and London. Each of these ports has a harbor where ships from foreign lands may be seen every day in the year. Each port has dry docks for the repair of ships, and large warehouses for the storage of goods coming into Britain and going out of Britain. Each also has many factories making articles for use in the city, in other parts of the country, and in lands beyond the sea.

London. London has more people



Photo Brown Bros.

Fig. A. Street traffic at Ludgate Circus (place where several streets cross), London. The dome of St. Paul's Cathedral shows in the distance. Tell from the picture why you would feel at home if you visited London.

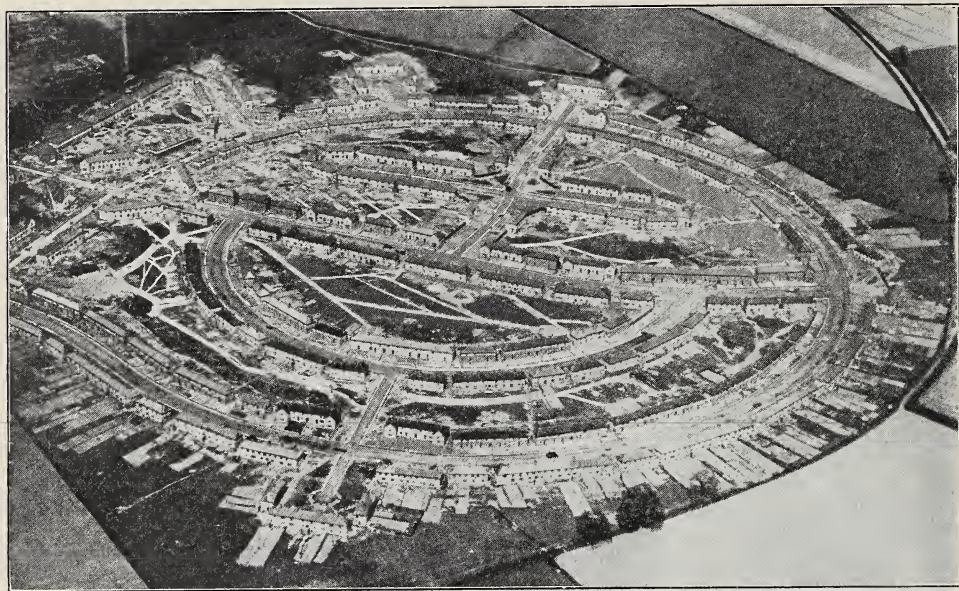
than any other city in the world. She had a million people in 1801 and 6,500,000 in 1901. How many people live in London now (Appendix)? There are many railroad stations from which trains go out in all directions. There are electric cars, thousands of motor busses, most of them double-decked, thousands of taxicabs, and hundreds of miles of subways.

London was a city in Roman times. She has been a capital for more than a thousand years; of what is she the capital today? On the streets of London we shall see dark-skinned men, with turbans, from India (Fig. 245-A); others, wearing the fez (a little cap), from Egypt or some other Mohammedan country; the sun-tanned white man from the tropics or the plains of Canada; the general or the admiral in his bright uniform. London is an interesting place. If we go to certain parts of the city, we can see hundreds of

Americans, and travelers from many other countries.

We can see buildings that were frequented by Queen Elizabeth, Sir Walter Raleigh, Henry VIII, and many other famous people about whom we read. We can also see the Halls of Parliament, where the laws are made; Westminster Abbey, where kings are crowned; art galleries with rare and beautiful paintings; famous libraries; and museums with interesting exhibits from all parts of the world. Students from many parts of the world visit London and use the art galleries, museums, and libraries that help to make the city famous.

Financial center. We may see the Bank of England, which does business with almost every far corner of the world. If we walk through the streets of some sections, we shall see on office doors the names of companies that own ranches,



© Ewing Galloway

Fig. A. An airview of one of several model villages which have been built for workmen and their families in England. Notice the farmlands about the village. Why is this village plan a better way of living than that in a large city?

mines, canals, railroads, plantations, factories, and other kinds of property in countries in many parts of the world.

Trade and manufacture. London is also a capital of trade and industry. It has more factories and more ships than any other city in the world, and it sends its ships to more places than does any other city.

London lies upon the River Thames, fifty miles from the sea. Long ago the ships crowded the Thames until no more could get in. Then the British went out into the fields near by and dug great basins or docks — acres of them, hundreds of acres of them, more docks and yet more docks, and then the city grew up around them.

Life on the pavements. Like many other big cities, London is an interesting place to visit, but as a home for boys and girls it is not good. There are people in London who never saw the country.

There are parks in the newer parts of the city, but the city is so big that in the older parts which might be called the *land of bricks*, there are tens of thousands of boys and girls who never played on the grass or even on bare ground in all their lives. It is only on the pavements that they can play, while their fathers work near by on the docks unloading ships, or in the factories making things. Because they have found that the great cities are not the best places in which to live, the English have built some of the most perfectly planned cities in the world.

One of these villages is shown in Figure 112-A. This village was built to house working men and their families. It has a central heating plant, an electric light plant, and many other conveniences found in the most modern towns.

Unemployment. In recent years, things have not gone so well in Great Britain.



Oroc Photos

Fig. A. Lake Windermere (Fig. 101-A [O-3]) in northwestern England. This lake is in the beautiful English Lake country just north of the city of Barrow.

Factories have been built in many other countries. In most years, France and Germany make more steel than Britain does. The United States makes five or six times as much. Cotton factories have been built in dozens of countries. Hundreds of thousands of people were out of work in Great Britain from 1920 to 1935, and much of the tax money goes to support those who cannot find work.

THINGS TO THINK ABOUT AND TO DO

A ball game played with maps. Team 1 "throws," or calls the names of British cities to Team 2. Team 2 must show the city on the map and must tell an important fact about it. Four correct answers count for a run; three misses puts the team out; then the sides change.

A quiet relay. Each of the two captains makes for his team a list of the names below. Call this list Column 1. Head Column 2 "Exports," and Column 3, "Imports." At a signal, the captains start their teams, having the players in turn fill in the blank columns with the name of the article of export to Great Britain or import from Great Britain corresponding to the name in

Column 1. Count 10 for the team that finishes first and 5 for each correct answer.

| | | | |
|--------------|--------------|-------------|-------------|
| Argentina | Buenos Aires | Denmark | Leeds |
| Australia | Chicago | Galveston | London |
| Adelaide | Caribbean | Glasgow | Montreal |
| Bombay | Canada | Gulf of | Manchester |
| Bristol | Caspian | Mexico | Mobile |
| Birmingham | Charleston | Hull | New York |
| New Orleans | Newcastle | Liverpool | Odessa |
| Persian Gulf | Sweden | New Zealand | Southampton |
| | | Sheffield | |

Running the race backwards. Fold under Column 1 in the above exercise. Pass the columns along the teams as before, this time filling in the names of the places corresponding to the exports or imports.

Sight-seeing in London. Make a list of the sights you would see in visiting London. Find pictures to show to the class to make your sight-seeing trip interesting.

A great capital. Explain the expressions: London is a Capital of Finance; of Government; of Trade and Industry.

Give reasons. (Find answers to all, but write the reasons for two):

1. Why do so many people live in London?
2. Why must Great Britain import food?
3. How can she manufacture, though she has so little raw material?
4. How can she pay for the food and raw materials she buys?



Oreo Photos

Fig. A. Upper Lake, Killarney (Fig. 101-A [N-3]), Ireland. This is the most beautiful though the smallest of the three lakes of Killarney.



Photo Newlin R. Smith

Fig. B. A deposit of peat. The author of this book is standing at the bottom of the deposit. Chunks of peat are piled up to dry behind him.

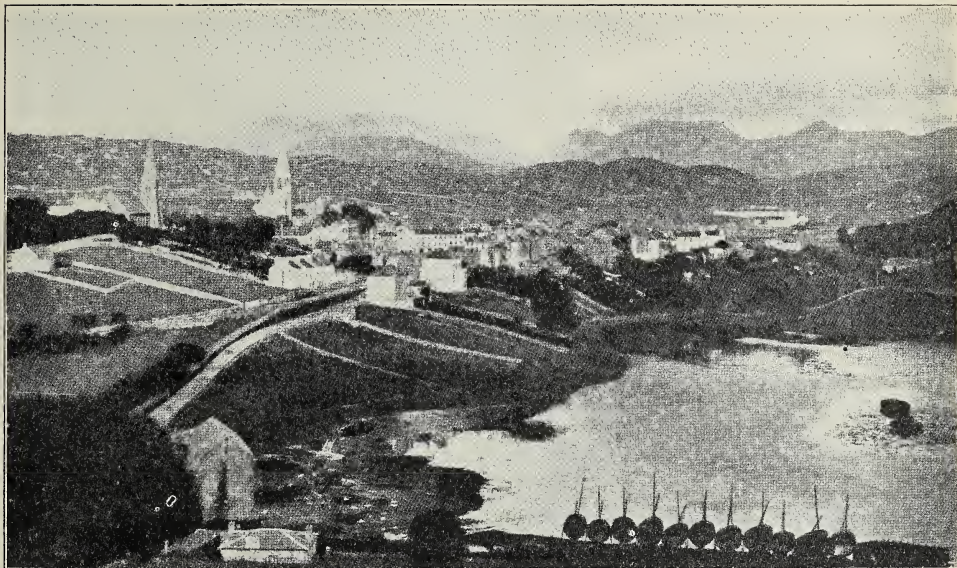
IRELAND

An island of green farms. The dampness, the showers, and the cool summer make the grass of Ireland greener than any that can be found in the United States, except possibly the northwestern corner of the state of Washington. Because of this greenness, Ireland is called the *Emerald Isle*. A rain at harvest time may spoil a crop of wheat or barley, but it does not hurt the potato. This is very important for rainy Ireland. Almost no grain is

grown, but for a long time the potato has been the chief food crop grown by the Irish farmer.

The people of Ireland use the greater part of their land for permanent pasture and hay, and have butter, live stock, and eggs to sell. These are the chief exports of Ireland. Many little steamers carry them across from Dublin to the ports of England and Scotland. The Irish Free State is a nation of small farmers. Three farms out of four have less than 30 acres. The farmers have many cooperative societies. The members of these societies work together, so that they can make good butter, eggs, and bacon, and get good prices for them. I have seen billboards in many parts of Great Britain advertising Irish butter and bacon, which are of very fine quality. About three fourths of Ireland's exports are from the farms. One reason for this is that they have very little coal, except that which comes in ships from England, Scotland, or Wales. Electricity is now being made at a great water-power plant on the River Shannon.

Fuel under water. One seventh of the



Courtesy Cunard Steamship Line

Fig. A. This beautiful Irish village of Clifden is on one of the lakes north of Galway (Fig. 101-A [N-3]). No matter in what part of the world an Irishman may be, he always has a wish to return for a visit to the *Old Country*, as he calls Ireland. What in the picture tells why the Irish love their native land?

surface of Ireland is covered with peat bogs. Every summer about six millions of tons of peat are dug up and dried for the winter fires.

Flax and linen. The damp climate is good for the flax plant. This plant is about two or three feet tall, with a woody stalk. The stalk contains long, strong fibers, from which linen is made. For a long time Ireland has been famous for its fine linen. It used to be made by hand in the homes. Now it is made in factories, most of which are in Northern Ireland, and most of the fiber is imported from Belgium and Latvia.

The city of Belfast in Northern Ireland has shipyards that build some of the largest and finest ships in the world.

THINGS TO THINK ABOUT AND TO DO

Map studies. 1. Compare the size (Appendix) of Ireland with the state in which you live.

2. Compare its location in latitude.

3. Compare the rainfall (Fig. 56-A).

4. Is the surface of Ireland like that of England, of Scotland, or of Wales?

5. Do the larger cities of Ireland face toward England or toward the Atlantic?

6. Name five of these cities.

7. Sketch free-hand a map of Ireland. Show latitudes, names of surrounding waters, rain-bearing winds, cities, rivers, Northern Ireland, and the Irish Free State.

Are the Irish rich in resources? Name:

(1) food crop; (2) crops they cannot raise; (3) poor kind of fuel; (4) sources of power; (5) fiber plant; (6) manufactures.

CHAPTER SUMMARY

"At home." At home to a British citizen may mean any of 135 parts of the world. Let each pupil name, orally or in writing, five distant parts of the British Empire, and tell how each helps the motherland.

Playing riddles. I am a great English king of long ago. I united many kingdoms into powerful England. Who am I?

Make up riddles like these about the location, size, climate, surface, people, colonies, cities, products, manufactures, etc., of Great Britain. Each pupil may write five such riddles and exchange them with classmates to solve.



Fig. A.

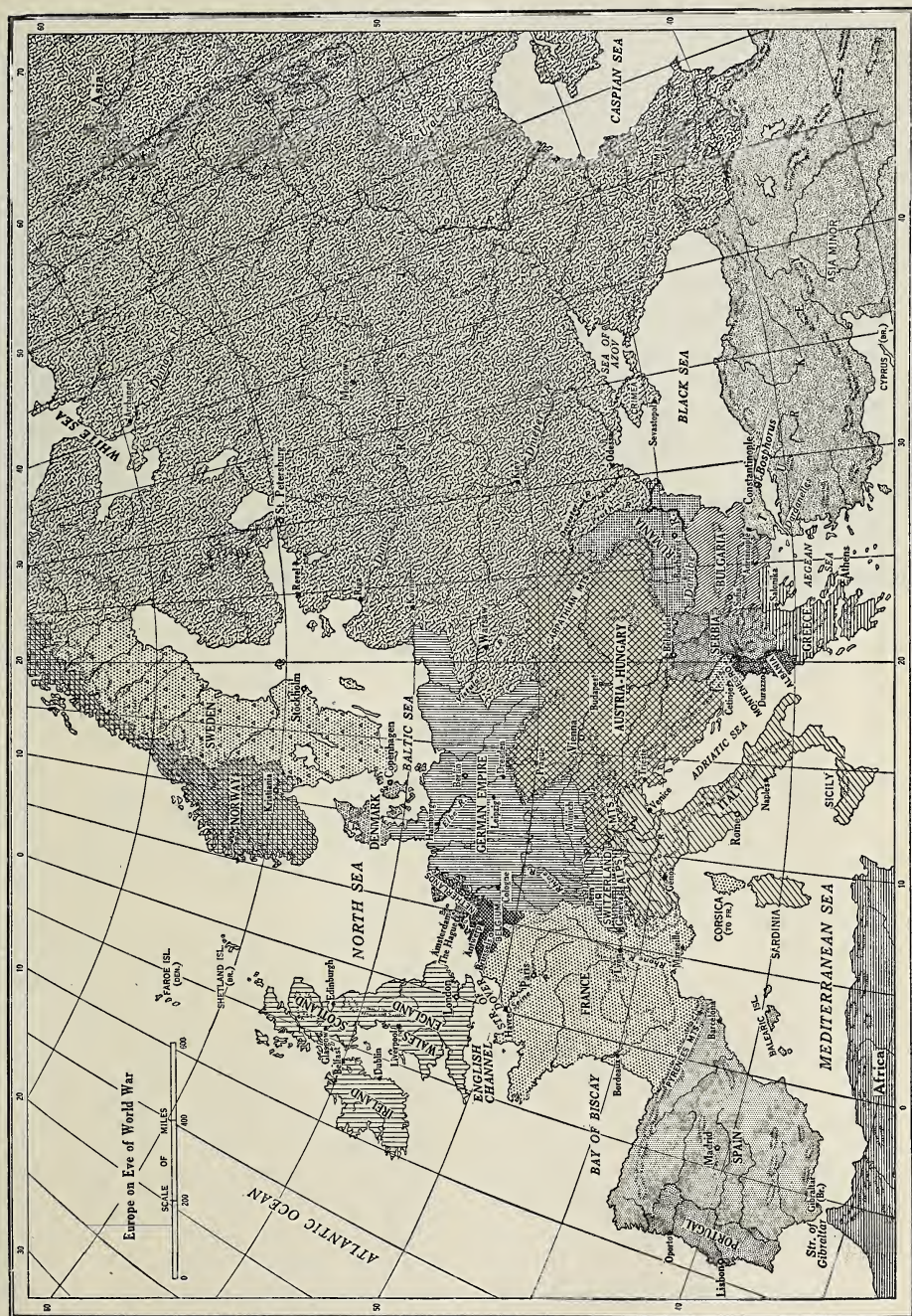


Fig. A. A map of Europe which shows boundaries of countries and certain place names as they were in 1914, just before the World War.

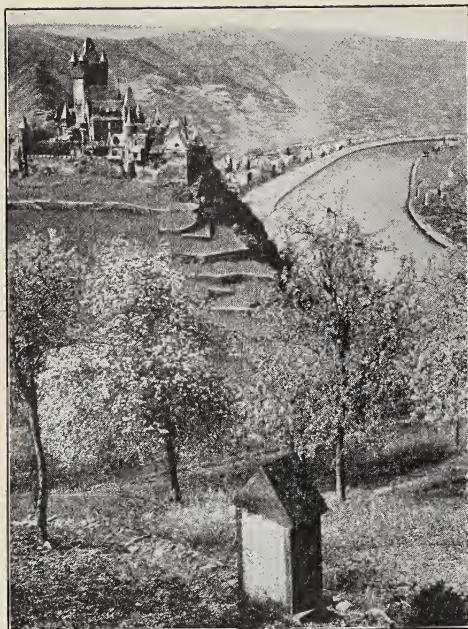


Fig. A. Germany—a land of many castles. The castle in the picture is Cochem Castle, on the Mosel, a river which flows into the Rhine. See the terraced hillsides planted with vineyards.



Fig. B. Neuschwanstein Castle is in the highlands of southern Germany. Why would it be difficult for an army to capture this castle in the days before artillery and airplanes?

Courtesy German Tourist Information Office

GERMANY

THE BEGINNINGS OF GERMANY

When you have finished this chapter, tell whether you think the following statements are true or false and why:

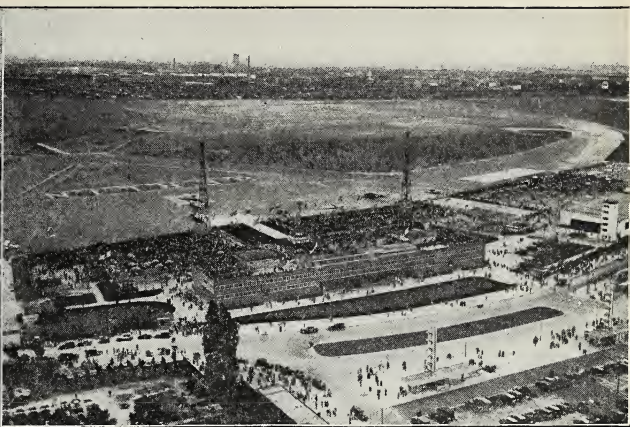
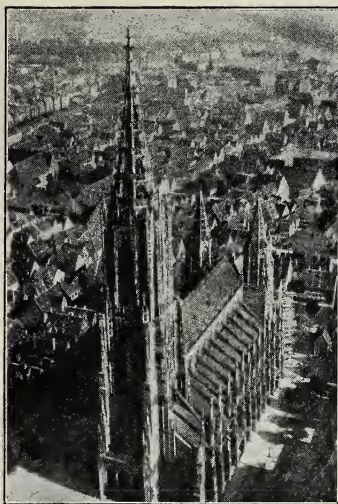
The climate of northwestern Europe makes energetic people. Nations must work together.

A land of many castles. Germany was a land of many small states for a long time after the many little kingdoms had become Great Britain. At first Germany was made up of more than 200 little kingdoms, principalities, dukedoms, bishoprics, and free cities. Each had its own king, prince, duke, bishop, or city council. Every state had its own castles and palaces. If you visit Germany, you will surely want to see many of these interesting buildings.

In 1871, twenty-six German states united to form the German Empire. After the World War the Empire became a republic. In 1934 a dictatorship was established.

Now make a table (see Appendix) showing areas, total population, and population for each square mile of Germany, the United States, Ohio, and Great Britain. Is Germany like Great Britain in having more people than her own land can feed with things from her own fields?

Feeding many people. How does Germany feed so many people? You have already learned (page 110) that Great Britain feeds her people by buying raw materials, manufacturing them, selling the produce, and buying food. England has not paid much attention to tilling her



Courtesy German Tourist Information Office

Figs. A-B. The old and the new in Germany: The cathedral at Ulm, begun more than 650 years ago, has the highest church spire in the world; the Berlin airport, said to be the largest and busiest airport in the world.

own fields for nearly a hundred years. Germany, on the other hand, grew all the food she could possibly produce. One reason for this was that she never had many good colonies, and, therefore, had to depend upon herself.

When the twenty-six states became the German Empire, the united country began to manufacture as England had done. But when Germany started, Great Britain already possessed nearly all the good colonies in the world, and she had also started her factory manufactures long before Germany did. Therefore, when Germany began to manufacture, England was well established in manufacturing. She had a great fleet of merchant ships and was selling goods in foreign lands. Germany made a late start, but she made a great success between 1870 and 1914. She developed trade and manufacture faster than even England had done.

Germany grew. In thirty years the population of Berlin, the capital city, doubled. German factories increased, cities grew up around them, people moved from the farms to the cities, and by 1895

half of the German people lived in cities. German steamship lines sailed from German ports to every continent and to every ocean except the Antarctic. The words "Made in Germany" were marked on boxes of goods for sale in almost every country.

Planning. How did Germany do all these things? She succeeded by hard work and careful planning, and by making good use of everything she had. To do this, the German government aided industry in many ways. She decided upon three things as being most important, and steadily went forward with her plan, (1) to educate her people so that they could be *scientific* and *efficient*; (2) to make laws to take care of the people so that they would not live in unsanitary cities or work in factories where they would breathe bad air or have their fingers cut off by unprotected machinery; (3) the Germans passed many laws that aided the people with their businesses. The government dug canals and harbors and built railroads. It aided shipbuilding, steamship lines, and the starting of new industries.



Courtesy German Tourist Information Office

Figs. A-B. The old and the new in Germany. The old town of Heidelberg, as seen from the Rhine. Here is located one of the famous German universities about which you read in this page. At the right is a water-power plant in the Alps Mountains, southern Germany. The water comes from the upper lake, rushes through the big pipes, drives turbines in the power plant below, and flows into the lower lake.

German education. Germany was one of the first countries in the world to have free schools. Germany went further than this; she passed laws that *made* the children go to school. In Germany a person who cannot read is almost a curiosity. In 1850, 1860, 1870, when a student in a university in Great Britain or the United States could study little but Latin, Greek, history, and mathematics, he could go to a German university and study science. Many Americans who afterwards became famous professors and inventors, went to German universities between 1860 and 1910. These men carried scientific learning back to American colleges and universities.

The sciences aid industry. We shall soon see how the study of science helped to build up Germany. Germany also had a great many schools in which people learned skilled trades, schools for cloth makers, paper makers, glass makers, and many other kinds of trade schools.

THINGS TO THINK ABOUT AND TO DO

Comparisons. Copy the following in a column headed "England." Opposite each statement write a corresponding one in a column headed "Germany." (1) Once made up of little kingdoms; (2) is now an empire; (3) has a king; (4) does not farm very much; (5) took possession of best colonies; (6) raised food in colonies; (7) no need for long railroads; (8) had an early start in manufacturing; (9) had an early start in trade; (10) developed trade rapidly; (11) has a climate that makes people energetic.

Map studies. With your map open before you, write questions about Germany suggested by each of the expressions below. A sample question on the first expression might be: "What is the size of Germany in comparison to the state in which I live?" Be sure you can answer each question yourself, before you give it to a classmate to answer.

Comparative size

Location

Neighboring countries

Neighboring bodies of water

Surface of North Germany

Surface of South Germany

Rivers

Chief cities

East Prussia

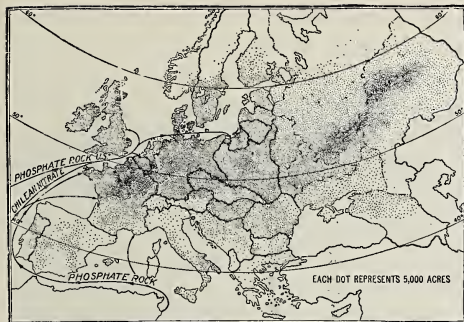


Fig. A. Acreage of oats in Europe. What do nitrate and phosphate rocks have to do with grain crops?

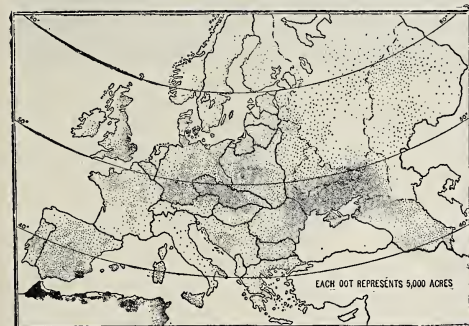


Fig. B. Acreage of barley in Europe and North Africa.

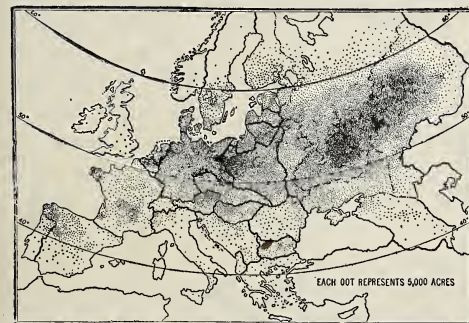


Fig. C. Acreage of rye.



Fig. D. Acreage of wheat in Europe and North Africa.



Fig. E. Acreage of potatoes in Europe.



Maps by U. S. Dept. Agr. show averages for a period of years.

Fig. F. Acreage of sugar beets.

THE GERMAN PLAIN

Science, agriculture, and the German Plain. More than half of Germany lies in the great, almost level, plain of northern Europe. Much of this is somewhat like the northern part of our own North Atlantic coastal plain—rather sandy, swampy, and with poor soil in some

places. The Germans studied in the laboratories of the universities and in many agricultural experiment stations, and learned how to drain swamps, fertilize land, and select good crops. Because Germany studies her business, you can travel mile after mile across the plain of North Germany and see on every side fields



Fig. A. Distribution of swine in Europe.

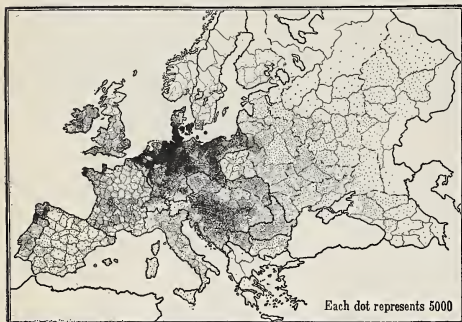


Fig. B. Distribution of cattle in Europe.



Fig. C. Distribution of sheep in Europe.

U. S. Dept. Agr.

full of fine crops of potatoes, clover, wheat, barley, and sugar beets.

A hundred twenty-five years ago, sugar beets contained only three per cent of sugar; they now have about seventeen per cent. How did this happen? For years educated men spent weeks cutting little samples from good-looking beets in the field. They

analyzed the samples in the laboratories, to find which beets had the most sugar. These were carefully saved to raise seed for the next year. Thus, year by year, the best crop had more sugar. The plain of North Germany is so fully used for plow crops that cattle are allowed to pasture only on the few places that are too wet or too hilly to plow.

Potatoes and alcohol. Germany, like northern Maine and northern Minnesota, is too cool for corn to do well, but the potato thrives. Compare the yield of potatoes an acre and the crop per person in Germany and in the United States (Appendix). Rye and potatoes are two chief products of the sandy plain of North Germany. Rye bread and potatoes are the main food of millions of German people. Potatoes are dried in Germany and made into flour. The flour is mixed with grain flour for bread. Potato meal is also an important food for cows and pigs. Potatoes are distilled to make alcohol. Many German automobiles use alcohol as fuel.

Forests and forestry. Great Britain has only five per cent of her land in forests. She depends upon buying her wood. Germany has rather more than a quarter of her area in forest. Some of these forests are on the plain, where the soil of almost pure sand is not good for any crop but pine trees. Most of the German forests are in the hill country.

THINGS TO THINK ABOUT AND TO DO

What's, why's, and how's. 1. What is the elevation of the German plain (Fig. 116-A)?

2. About how much of Germany does it occupy?

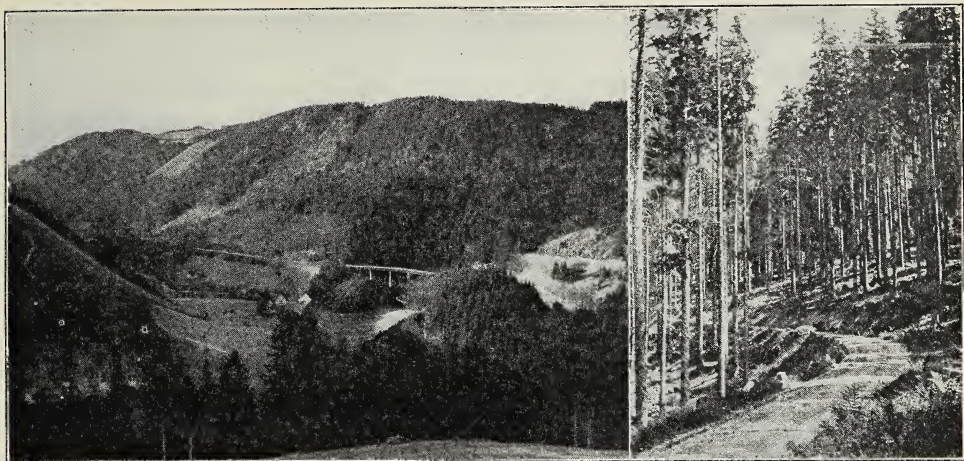
3. What rivers cross this plain?

4. What large cities are located on each of these rivers?

5. How much rain does this plain receive (Fig. 56-A)?

6. What crops are raised here?

7. In what ways do we use potatoes? In what ways do the Germans use potatoes?



Courtesy German Tourist Information Office

Figs. A-B. A part of the Black Forest, Germany, about which you will read on page 124. At the right we have entered the forest by one of its many paths. Would you call this a well-kept forest? Why?

THE GERMAN HIGHLAND AND ITS ROUTES

A beautiful, well-kept land. Look at the maps (Figs. 6-A and 116-A), and you will see that much of central and southern Germany is upland. Most of it is old, rounded mountains, much like our Appalachians, but it is a more pleasing country to see.

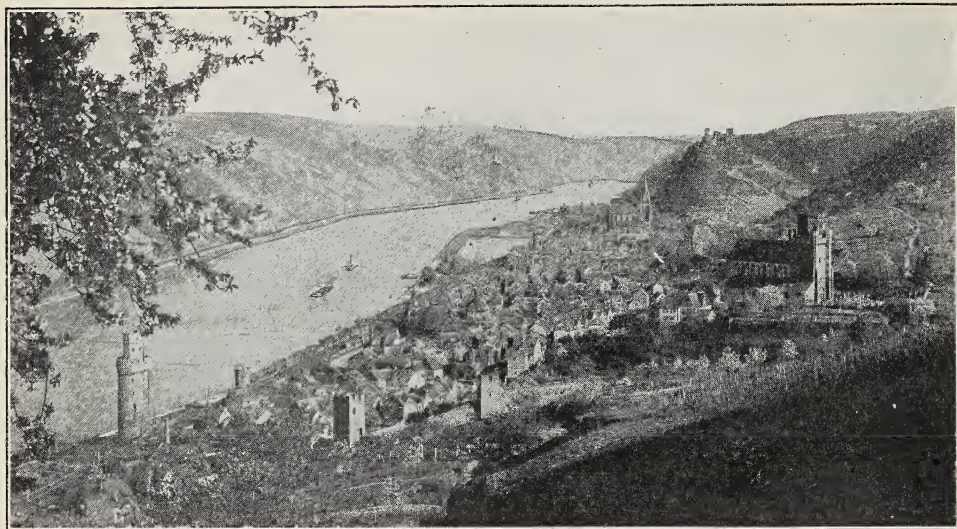
These highlands of Germany are beautiful and well kept, with young planted trees, tall old forests, hay fields, pastures, and well-tilled valleys. The American hill lands are often ruined by gullies. I have never seen a real gully in Germany, and I have looked for them very carefully. If you travel through the United States, you will see that many of our hill lands that are not in fields are very poorly planted with forest, and you can see any number of places where large areas have been burned over. I have traveled through Germany several times, and have seen the remains of only one forest fire, and that covered only about five acres. One sees thousands of hills well covered with trees of various ages that are planted,

cared for, and harvested like any other crop.

Some of the hillsides, especially those overlooking the Rhine, are terraced and planted to grapes that make wine so famous and costly that the terraced vineyards are worth several thousand dollars an acre.

Vacation land. Thousands of Germans spend their vacations by taking walking trips in the forested hill country. The traveler wears a green hat to show that he is a traveler. He usually has a feather in it, a knapsack on his back, and a walking stick in his hand. Families and groups of friends, groups of schoolboys or of schoolgirls, often take walking trips together. Miles and miles of paths have been made for the foot traveler. From lookouts on a thousand hills in the German upland, you can look down into valleys where the unfenced little fields lie spread out in patches showing many shades of green, yellow, and brown.

Through every valley goes a shining white road, passing like a great ribbon through one farm village after another,



Oros Photos

Fig. A. The Rhine. The importance of this great waterway to the inland trade of Europe can be understood only by studying carefully Fig. 124-B. The town in the right bank of the river is Wesel. See the two old castles.



Fig. B. Name each navigable river which you see on this map and trace its course on Figure 88-A. Tell which rivers are connected by canals. What country is shown in black? Why is this country well situated for trade?

each with its shade trees and church spire and surrounded by many well-tilled little fields. Here and there you will see a city, with factory smokestacks, and boats on a river. Perhaps it took generations of labor for men to make the streams into useful waterways. From the lookout,

you may walk along a carefully kept forest path to a picturesque little inn or coffee-house, whose keeper seems glad to make you comfortable.

The forest and the forest village. Many of the mountains of central Germany and near-by countries of central Europe are so well covered with forests that they are spoken of not as mountains, but as forests (*wald*). Thus Germany has the famous Black Forest (*Bohmerwald*).

People in the forest village make many small objects of wood, especially toys. The city of Nürnberg has a great toy industry. German toys hang on many an American Christmas tree.

The highways through the uplands of Germany and central Europe. Germany and her neighbors who share the central European highland are fortunate, because Nature has made many natural routes through the highland. You remember the great aid that the Mohawk Valley was and is to New York State. Now look closely at the map (Fig. 124-B).

Trace the courses of the Rivers Rhone, Seine, and Rhine, and their tributaries. See how close together their upper waters are. Canals have been built to join the three rivers near their sources.

Nature and man have made it easy for freight to be carried across Europe. On the map (Fig. 116-A) find München (Munich), the capital of the South German state of Bavaria. Note the railroads on this map. This city is on the line from Berlin to Roma, opposite the Brenner Pass, the best opening in the Alps for several hundred miles. Therefore it is on a great north-south trade route. It is a city with fine industries, schools, artists, and some of the finest museums in the world.

The Rhine. Roman writers tell us that 600 years before the time of Christ, canoes made of oak trees came up the Rhine River, bringing amber from Jutland to make ornaments for the Roman women. From that day to this, the Rhine has been an important highway. The Germans have dug the rocks out of the stream and have made locks around the rapids. Boats can now go from Switzerland to the sea. Name some cities on this river.

International rivers. How many countries does the Rhine River touch? (Fig. 92-A). Because the people of so many countries use this river, several nations have agreed by treaty that the Rhine traffic be managed by a commission. Just as a crowded street has traffic policemen, so this river, of use to so many peoples, has its traffic managed by a Rhine Commission. The members of the commission are appointed by Germany, France, Holland, Switzerland, Belgium, Italy, and Great Britain. What does this list show?

The traffic of many countries passes through Holland and Belgium and up the Rhine, just as American traffic passes through Canada and down the St.

Lawrence in the summer, and from Canada through the ports of the United States when ice closes the St. Lawrence.

Again look at your maps and see what river lets boats pass from Hamburg across Germany and up to the capital of the next country. Can you tell a reason why there should be also an international commission for the Elbe? Part of the work of this commission is to see that the trade of Czechoslovakia may use the port of Hamburg, just as the trade of Chicago at times uses the port of Montreal.

The Danube. The Danube River in turn furnishes an east-and-west thoroughfare through the highlands. A canal has been built from a branch of the Danube to a branch of the Rhine, called the *Main*. All these natural openings through the mountains are of course now followed by railroads, as is the famous Mohawk pass in New York State.

THINGS TO THINK ABOUT AND TO DO

A pleasant vacation. Pretend that you are a German boy or girl, and that you are going on a week's hike through the hills. Write or tell: how you dress; what you see and do; what views you photograph; where you eat and spend the night; what people you meet; what souvenirs you take home.

Map building. 1. On a blank map of central Europe, trace in red ink the following rivers: Seine, Rhone, Rhine and Main, Elbe, Danube.

2. Trace in black the boundaries of Germany, and use initials to show the surrounding countries.

3. Place dots for Berlin, München, Roma, Hamburg.

4. Mark Brenner Pass, the canals from the Danube to the Main, and between the Rhone, Seine, and Rhine.

5. With your map before you, tell how to travel and also how freight may go:

a. From the mouth of the Rhone to Hamburg.

b. From Roma to Berlin.

c. From the mouth of the Danube to Hamburg.

d. From Switzerland to the North Sea.

e. From Czechoslovakia to the North Sea.

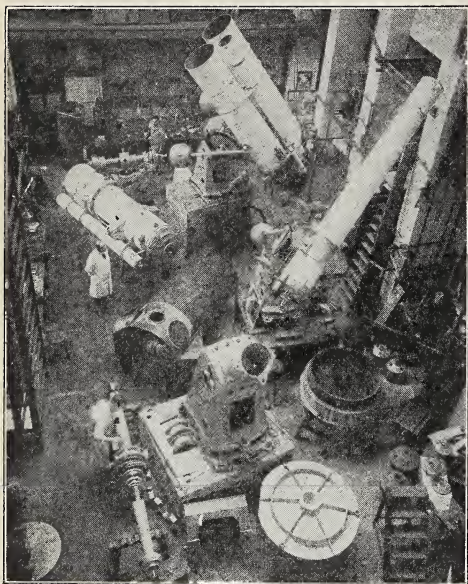


Fig A. Inside the great Carl Zeiss factory at Jena. Telescopes are being manufactured in this room. Be sure to look at Figures A and B as you read the section, "Science and the Instrument Industry."

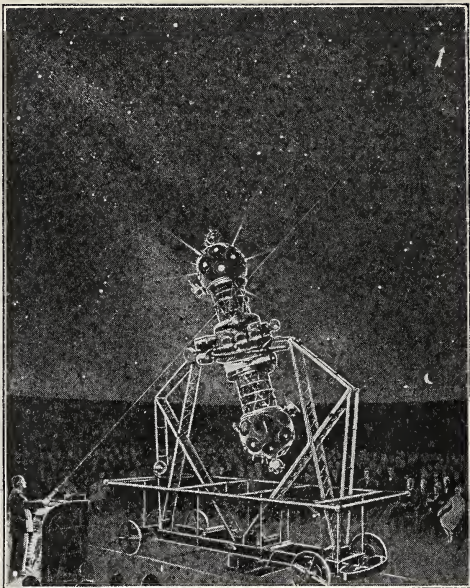


Fig. B. No, you are not looking at the sky but at the dark ceiling of a room. The planetarium shows the positions of the heavenly bodies exactly as they are in the sky. This planetarium was made by the Carl Zeiss works.

EDUCATION AND MANUFACTURES

Science and the chemical industries. Because of the science that was taught in her universities, Germany became the leading country in the world in the manufacture of chemicals. For example, for many years the city gas works in the United States and England threw away the tar that comes out of the coal when gas is made. The Germans built great chemical works and used their tar to make dyes for clothing, and thousands of medicines, and other chemicals. They made hundreds of different colors. For many years, dyestuffs and thousands of other chemical substances have been important exports of Germany.

Potash, salt, and tar. Fortunately for her chemical industries, Germany has three great chemical raw materials: tar from her coal, rock salt from many mines, and potash. She was fortunate enough to

have almost a world's monopoly of potash. There are great mines of it on the Elbe River about a hundred miles from Berlin. Germany has exported many shiploads of this chemical for many years, and still does. It is used in almost every fertilizer factory in the world. During the World War, when trade with Germany was shut off, the potato crops in many American fields wilted and blighted for want of their potash food. After the World War, one of the German potash fields in Alsace, near the Rhine in the northeast corner of France, was transferred from Germany to France; so Germany now has a rival in producing potash.

Science and the instrument industry. If you go to a laboratory and look at a fine microscope, you will probably see on it the word *Zeiss*. Carl Zeiss melted glass and made lenses in the German university

town of Jena. He needed more knowledge, so he went to Dr. Abbé, professor of mathematics in the university. Abbé worked out the mathematics of lenses and got some new ideas. Then he and Zeiss spent the rest of their lives perfecting glass and lenses.

Both are now dead, but the Carl Zeiss Stiftung (foundation) has become the lens and fine-instrument trust of Germany. Its lenses, microscopes, field glasses, and other manufactures are sold everywhere. It operates many factories. It maintains an expensive research laboratory. Boys from all over Germany pass examinations and take special courses to enter the Zeiss works as beginners. When they are too old to work, they are pensioned. The profits of the *Stiftung* support hospitals, parks, schools, the university (in part), and other institutions that are useful in the community. This trust is organized to make good glass, pay good wages, to make fair profits, and to help the community. Neither Zeiss nor Abbé themselves made a lot of money out of it.

Nitrates. The greatest single chemical manufacture in Germany is that of nitrates. These are used for fertilizer and for raw material in many factories. There was a time, not long ago, when all the nitrates used came from the deserts of Chile. Then a German chemist, named Haber, learned how to use a low grade of brown coal, *lignite*, to help cause nitrogen from the air to unite with other materials and make nitrate. About three fourths of the air is nitrogen, but it is hard to get it. This nitrogen made from the air is called *synthetic nitrate*. The word *synthesis* means "putting together."

In 1913, Germany made 121,000 tons of synthetic nitrate; in 1928, 730,000 tons. Poor Chile is almost a financial and commercial ruin because the synthetic nitrate

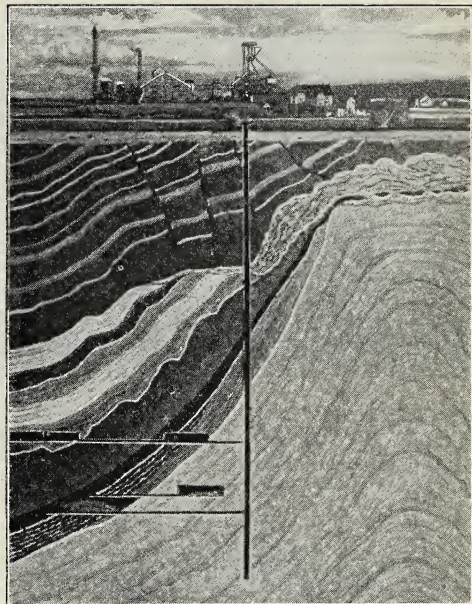


Fig. A. Imagine that the surface of the earth has been cut like your mother cuts a pie and that you are looking at the cut. The white mass at the bottom is rock salt. The streaked layer above it is a deposit of potash. Notice the central shaft and the side tunnels and tell how miners get out the potash.

has destroyed so much of her market.

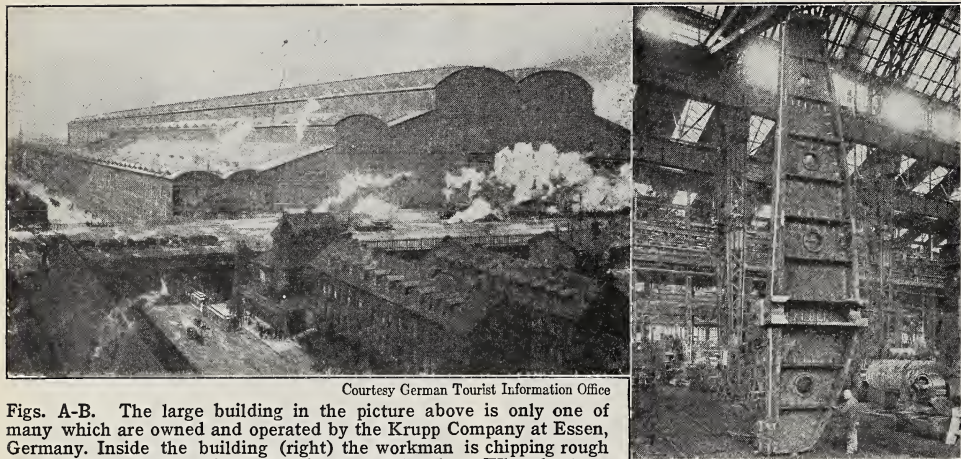
THINGS TO THINK ABOUT AND TO DO

Useful waste. Of what use are: tar, salt, potash, nitrogen? Ask this question of your druggist and use reference books. See who can make the longest lists of uses.

"What is the use of schools?" I heard an American boy ask this question. How would a German druggist have answered the question? a German cloth merchant? a German factory worker? a German farmer? a German artist?

From A to Z. Name the two men who gave us fine lenses. List the objects that have lenses. Ask to see the eyeglasses of people whom you know. Of what are lenses made? Notice their different shapes and thicknesses. Draw some in your notebooks. What has mathematics to do with lenses?

Talks. Give a talk about nitrate as it might be given by a wheat plant (of course you pretend that the wheat plant can talk); or by a manufacturer of chemicals; or by a Chilean; or by a farmer.



Courtesy German Tourist Information Office

Figs. A-B. The large building in the picture above is only one of many which are owned and operated by the Krupp Company at Essen, Germany. Inside the building (right) the workman is chipping rough edges from a steel casting many times as tall as he. What do these two pictures tell you about manufacturing in the Ruhr?

GERMAN COAL AND IRON INDUSTRIES

Coal and iron in the Rhineland. Germany has three coal fields. The lower Rhine Valley and the land near it in Belgium and northern France have the most important coal fields on the continent of Europe. Part of the coal underlies the valley of the River Ruhr, branch of the Rhine, in the German state of Westfalen (Westphalia). The Ruhr Valley is also a great iron-manufacturing center.

Essen is the greatest manufacturing city of the Ruhr district. Essen is so much like Pittsburgh that you might call it the *Pittsburgh of Europe*. Pittsburgh has boats on the navigable Ohio. Boats with iron ore come to Essen up the navigable Ruhr and the navigable Rhine. The Ruhr Valley is smoky with iron plants, coal mines, coke plants, steel mills, and machine shops. Here is located one of the great export industries of Germany — machinery. Germany makes much fine machinery.

To the Ruhr Valley also comes much of the import lumber and much grain to feed the city populations. Thousands of

trainloads and thousands of boatloads of black coal and of brown coal are dug in this region; the coal goes up and down the Rhine River by boat and the Rhine Valley by train, for there are important railroads on both sides of the river.

How many people has Köln (Cologne)? It is the largest city of the Rhineland, with many makers of woollens, cottons, and perfumery. It has a very famous cathedral, of which the people are justly proud. For more than 600 years, different kings and emperors had men at work on this great building.

The Saar and Lorraine. The north-eastern corner of France near the Rhine is the department of Lorraine, with the richest iron-ore fields in Europe. France trades Lorraine iron ore for Ruhr coal and coke. The Saar Valley (790 square miles, 800,000 people) adjoins Lorraine. It has coal, iron, glass, and chemical industries. From 1920 to 1935 it was ruled by the League of Nations. But in 1935 the people voted to return the Saar to Germany.

The central coal field. The second field is at the edge of the highland. Near it



Courtesy German Tourist Information Office

Fig. A. A new type of railroad train which the Germans are building for use on their railroads. They call it a *schnelltriebwagen* (speed motor car). The train has a speed of 106 miles an hour.

are three cities: (1) Dresden, the capital of Saxony, one of the German states, and famous for its manufacture of porcelain and chinaware; (2) Chemnitz, with great textile manufactures; and (3) Leipzig, the city most famous in the world for the manufacture of books and fine maps. The Germans are excellent map makers, and the people are willing to pay for good maps.

Leipzig has long had trade with Russia. This trade has made her one of the world's great fur markets. Twice each year there is a great fair, to which merchants come from many European cities and from foreign countries to buy and to sell furs.

The Silesian coal field. The third coal field is like the first in that it lies in more than one country. Part of it is in Poland, and part in the southeastern corner of Germany, in the state of Schlesien (Silesia), not far from the city of Breslau. This coal makes Breslau an important iron-manufacturing center. We shall soon see why it is important in foreign trade.

THINGS TO THINK ABOUT AND TO DO

Draw a free-hand map. Draw another outline map of Germany. Locate the three coal fields by black shading. Use dots, lines, and initials to locate: Alsace, Rhine, Ruhr, Westphalia, Essen, Köln, Lorraine,

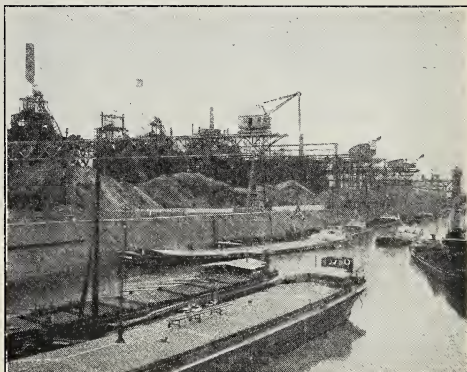


Fig. B. The Rhine boasts another great advantage which the Ruhr District has. The barges in the picture are loaded with coal. See the grab-bucket which the big crane is dropping into one of the barges.

Dresden, Saxony, Chemnitz, Leipzig, Silesia, Breslau, Poland, Czechoslovakia.

That reminds me. When I think of Alsace, I remember potash fields. Every one of the above names should remind you of an important location, industry, or product. Write, or tell something that you remember, about each.

Clear up the coal situation. Copy and fill in the following outline.

| COAL FIELDS | CITIES | PROVINCE, STATE, OR COUNTRY | LOCATION OF IRON | MANUFACTURES |
|-------------|--------|-----------------------------|------------------|--------------|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |

Suppose. Suppose Germany had no coal. What difference would it make?

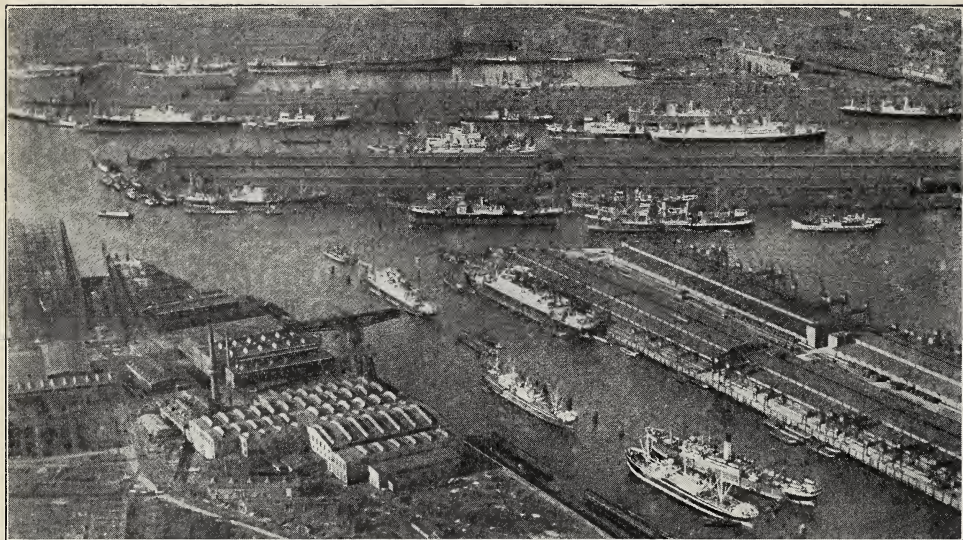


Fig. A. A part of the harbor of Hamburg, one of the great ports of the world. Find Hamburg on Fig. 116-A. Most of the waterways you see in the picture were dredged from the flat lands along the Elbe. They are deep enough to permit the largest ocean liners to dock easily.

FOREIGN TRADE AND SHIPPING

Germany's location. Look at the map of Europe (Fig. 92-A) and notice in what part of Europe Germany is located. How many countries touch her boundaries? Take a piece of paper and measure off on it a line equal to 400 miles on the map of Europe. Make a list of the large cities outside of Germany that are within 400 miles of Germany.

Germany's riches in coal, iron, steel, glass, potash, and salt give her a great chance to sell to her European neighbors her fertilizers, chemicals, iron and steel, machinery and textiles. As about three fourths of Germany's exports are manufactures and as the country comes to depend more and more on foreign trade, she finds that her neighbors buy much of her manufactured goods, while distant countries send her many of the raw materials. For this, too, she is well prepared.

German canals and ships. We have already learned how the Rhine boats

carry the trade of western Germany that passes through Rotterdam and Anvers (Antwerp), two of the world's great ports. Farther east you will find ports at the mouths of the Weser, the Elbe, and the Oder. Each river has been made navigable for boats. Many canals have been dug in the northern plain, and there is an east-west canal system that connects the Elbe, the Oder, and the Weser. German steamers held several records for speed in crossing the Atlantic until 1935 when the French liner *Normandie* exceeded them.

Germany did not have good harbors, but the people made them. The harbors of Bremen and Hamburg have been dug out in the meadows, like the harbor of London, until now there are no finer harbors anywhere. There are miles and miles of freight sheds. If you walked along them, you might see bales of cotton from Texas, barrels of tannin extract from Argentina, mahogany logs from British West Africa, lumber from Washington and



Fig. A. Airview of a part of Berlin. Near the center of the picture is the Dom (cathedral). To the right of the Dom is the palace in which the emperor lived when Germany was an empire.

Mississippi, rice from Siam, beans from Manchukuo, wheat from Galveston, and hundreds of other raw materials. Machinery in the harbor of Hamburg can lift a single piece of freight weighing 250 tons.

Find American cities that have about the same population as these three German ports. Each of them has shipyards for the building and repair of ships, and many factories using imported raw materials.

THINGS TO THINK ABOUT AND TO DO

Two-way streets. List in two columns Germany's exports and imports. What do they tell you about Germany?

Studying rivers. Copy and fill in the table to show cities that use rivers for in-and-out trade.

| CITIES | RHINE | WESER | ELBE | ODER |
|----------------|-------|-------|------|------|
| At mouth..... | | | | |
| On or near.... | | | | |

"I am the master of my fate." Germany's harbors were not naturally good and safe; but Germany has made them good. Explain.

THE NEW GERMANY

A German factory town. Germany has done many new things since 1920. Let us take a walk outside a German city to see some of the new things. We leave the old city and pass for a time through truck gardens. Then we pass several factories. Beyond them are some large apartment houses that have recently been built for the workers. Each apartment has a small porch, and there are flower boxes outside the windows. Between the apartment houses are parks, with sand boxes, shade trees, and swings for the children.

Beyond the apartments, we pass for a while through small gardens. Each garden is about sixty feet square. Each has a path down the center. At the end of the path is a little house for shelter if a rain storm should come up suddenly. On each side of the path are flowers. The rest of



Courtesy German Tourist Information Office

Fig. A. Oberammergau, nestling at the edge of the Alps in southern Germany, is one of the most famous villages in the world. Here, every ten years, is given the Oberammergau Passion Play which people from all parts of the world attend. The theater is the large building at the right.

the garden is in vegetables. Some of these gardens belong to people who live in the near-by apartments; some belong to people who live in the city a mile away. They ride out on their bicycles, and in the long summer evenings they cultivate their flowers and vegetables. They go back home at eight or nine o'clock with their bicycles well loaded and themselves refreshed from being out of doors.

The road is like many other roads in Germany. The center is wide and smooth for wagons and automobiles. On one side is a footpath; on the other side is a path for bicycles. There are many bicycles in Germany, as in all the other countries of western Europe. The people use bicycles because they cannot afford to own automobiles.

The road is lined with fruit trees, and the money from the fruit helps to pay for the road. I have ridden in an automobile

from the shores of the Baltic to Berlin, and from Berlin to the Alps. Almost every mile of the way the road was lined with trees, nearly all of which were fruit trees—apples, plums, pears, or cherries.

The German capital. Berlin has palaces, museums, and many fine buildings, but it is not full of ancient relics as is Venezia or Firenze or London. Most of Berlin is new, almost as new as Chicago—with hundreds of miles of new, wide streets and modern buildings.

Germany's growth has made Berlin the third city in population of the world. It is a great railroad center. River boats run north and south; canal boats run east and west, and, as in London, almost everything you can name is manufactured in Berlin.

German books and music. The Germans have written thousands of scientific books. Many of the world's greatest musical composers are German; their

music is known and enjoyed in all parts of the world. The people of the old Germany loved music, and those of the new Germany continue to do so. In Berlin, Dresden, München, and several other capitals of the German states, opera houses and theaters are supported in part by the government. The German people listen most respectfully to fine concerts and operas. If you ride through Germany on a summer Sunday afternoon, you will hear fine concerts in the parks in many cities, towns, and even villages.

Swift changes. Germany is one of the countries where many new things are happening; so she is an interesting country to watch. Germany, like England and the United States, is beginning to be troubled by new industries in foreign lands. Other countries are building up chemical plants and making for themselves the things they once bought from Germany. These and other swift changes often make problems that are difficult to solve. Germany is meeting some of her problems in a very interesting way.

Perhaps some member of the class may want to read about the German Coal Cartel, and tell the class how it has managed the coal industry so that Germany has not had so hard a time as we have had with our coal problem.

The steel syndicate. The steel manufacturers of Germany, France, Belgium, and Luxembourg formed an agreement in 1926. Those of Czechoslovakia, Austria, and Hungary joined it later. Each agreed to produce only a certain percentage of the steel that they all could sell. This steel syndicate had one fourth of the steel capacity of the world.

Getting along with neighbors. Look at the map (Fig. 92-A) and you will see that a part of Poland, called the *Polish Corridor* (Pomorze), cuts Germany into two

parts. The settlement after the war in trying to put each people under one government gave the Corridor to Poland as an outlet to the sea. Most of the people in the Corridor also are Polish. Germany and Poland have quarreled much about this corridor. It is one of many troublesome things that may make war in Europe.

Colonies. At the end of the World War, 1919, the German colonies were given as mandates as follows:

Togo (Fig. 278-A, Guinea coast, longitude 2° E.), 13,000 sq. mi. to Great Britain; 21,000 sq. mi. to France.
 Cameroon (Fig. 278-A: P-5 Guinea coast), 34,000 sq. mi. to Great Britain.
 Southwest Africa (Fig. 278-A: P-8), 166,000 sq. mi. to France; 322,000 sq. mi. to Union of South Africa.
 German New Guinea (Fig. 324-A: F-6), 93,000 sq. mi. to Australia.
 Bismark Archipelago (Fig. 324-A: G-6), 20,000 sq. mi. to Australia.
 Solomon Islands (Fig. 324-A: G-6), 4,000 sq. mi. to Australia.
 German Samoa (Fig. 324-A: K-7), 1,260 sq. mi. to New Zealand.
 Marianne, Caroline, and Marshall islands (Fig. 324-A: E-J-5), to Japan.
 Some very small islands in the central Pacific, to Japan.

In 1935, Germany asked to have these colonies returned to her. You will study about these various lands later in your geography work.

THINGS TO THINK ABOUT AND TO DO

A picture map. 1. Reread pages 131-132 and then draw a picture map of a German factory town.

2. Tell why this town is a good place in which to live.

A sketch map. 1. Sketch rapidly Germany, East Prussia, the Polish Corridor.

2. How is this corridor supposed to aid Poland? Why is this corridor objectionable to Germany?

3. Add to this map all the important things which you think the class should remember in their "mind" maps of Germany so that they can read about Germany intelligently in the newspapers.

CHAPTER SUMMARY

Words to use. Make a list of words and expressions to use in sentences to show that you know Germany. See who can make the best list. Compare your list with that of another member of the class.

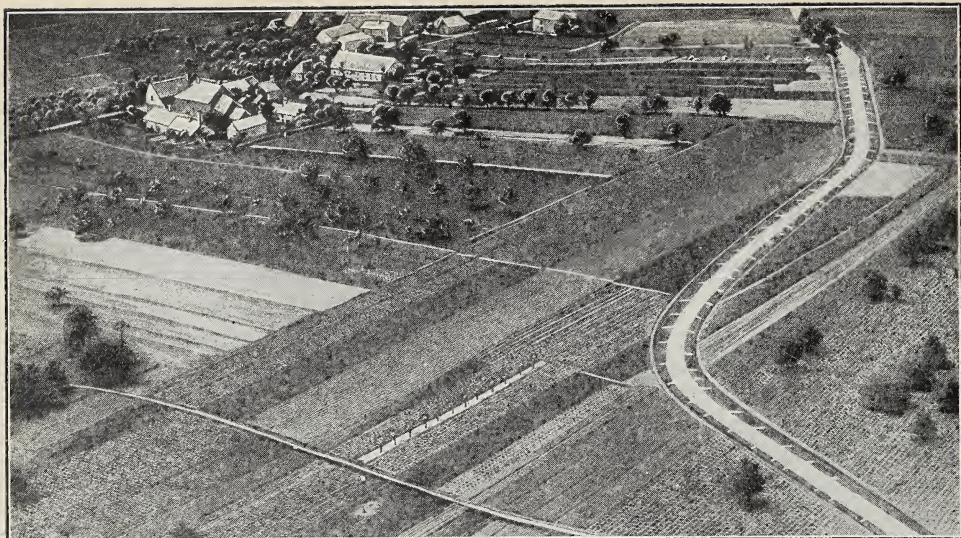



Fig. A. At the top of the picture is the French farm village in which Jean Ribot lives. After you have read the story, tell something about the fields which you see.

FRANCE, BELGIUM, AND LUXEMBOURG

AN AGRICULTURAL NATION

 *So near and yet so far.* On a clear day you can stand on the north coast of France and see the white chalk cliffs of England. Boats will take you across the Channel (*the silver streak*) in an hour and a quarter. So many boats cross daily that you say it is almost like a sea street-car service. If you wish to cross even more quickly, you can leave London or Paris by airplane in the morning, go to the other capital, attend to business, have lunch, and return in the early afternoon.

Do you wish to go from France to Germany? You can cross the Rhine in three minutes or cross a land boundary in three steps. Find on the map (Fig. 92-A) where this can be done.

Problem I. As near as France is to England and Germany, she differs from her two neighbors in many respects. As you study, make a list of these differences and try to discover their causes.

Problem II. Find on the map (Fig. 88-A) French lowlands, uplands, and mountains, shores facing a warm sea, and two other bodies of water. How do these physical characteristics affect French life and occupations?

A French farm village. Jean Ribot is a French boy, fourteen years of age. He lives in a village in the northern part of France, near the Belgian boundary. In Jean's village there are only thirty houses; the village is surrounded by vegetable gardens, fruit trees, and a few shade trees. Two miles distant across the seemingly level plain is another little village. Jean can see its church steeple standing above the trees. On the plain between the villages there is not a tree or a fence, only many small fields.

In France, as in nearly all of Europe, the farmers live in villages, where their houses and barns are close together. Their fields are on the land surrounding the villages.

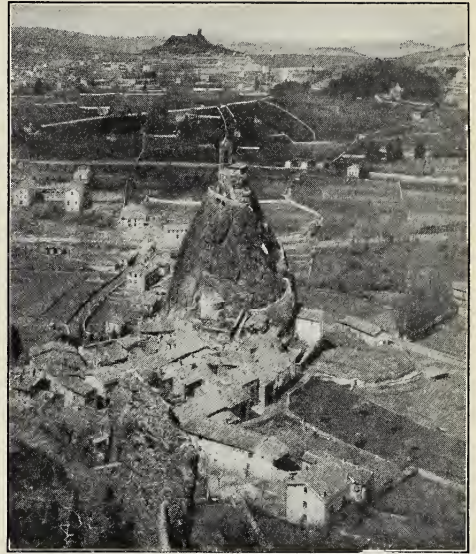
A French farm. Jean's father, Pierre, owns twenty acres of land — twenty-two pieces, scattered about on the plain on which the village stands. Pierre has two horses and three cows. He does not need two horses on his twenty acres all the time;

so he plows for his neighbor, who has only five acres and no horses at all. The neighbor pays Pierre by helping with his work.

Pierre grows five crops: clover, oats, wheat, potatoes, and sugar beets. The beets bring in the most money, but wheat covers more ground. Each field grows a different crop each year. This is called *rotation of crops*. The horses and the cows eat all the clover and oats. Some of the wheat Pierre will sell; some he will take to the mill at the edge of the village, near the church. The miller will keep one sixth for grinding the wheat into flour. Three acres planted to potatoes will, if the weather is good, produce six hundred bushels, most of which will be sold.

Raising the sugar beets is the biggest task of all on the little farm. Pierre covers the beet field with manure, which he hauls from the barn in the village. He then plows the earth deeply and harrows it over and over again until it is almost as fine as meal. Jean and his mother, and Susanne, his sister, drop the small seeds into the long, straight furrows that Pierre makes with the plow. This is very important work. The seeds must be planted neither too thickly nor too scantily. When the seeds have sprouted, thousands of little weed seeds have sprouted too; and the women and children must spend days, on hands and knees, pulling up the little weeds and thinning out the beet plants with their fingers. A machine cannot do this work.

The Ribot family is busy all summer long in the fields. With the horses, Pierre cultivates the beets and potatoes. His wife and the children hoe and pull out the weeds again and again from between the plants. The entire family works at cutting the wheat, oats, and hay, and hauling the crops to the barn in the village. They go out in the farm wagon in the



© Ewing Galloway

Fig. A. In the foreground of the picture is the French village of Le Puy. The little chapel on the steep rock dates from the tenth century. It is reached by 277 steps. See the cultivated fields about Le Puy. Tell how these fields are worked.

morning, take food and stay all day in the field, the baby sleeping in the wagon most of the time. Several families often eat lunch together and have a sociable time.

One day as Jean ate his sandwiches, he counted twenty-five wagons within sight. They belonged to people from three villages, who grow beets on this well-tilled and densely peopled plain.

Rabbits. At evening the families get into their wagons and ride back to the village where they live. The Ribots take a big basketful of weeds and all of the little beet plants which they have pulled up in thinning the rows, for the rabbits and other animals to eat.

Jean and Susanne have rabbit hutches in the shed against the side of the barn. Rabbits can live, thrive, and raise big families in small boxes or hutches. Jean and Susanne have four mother hares

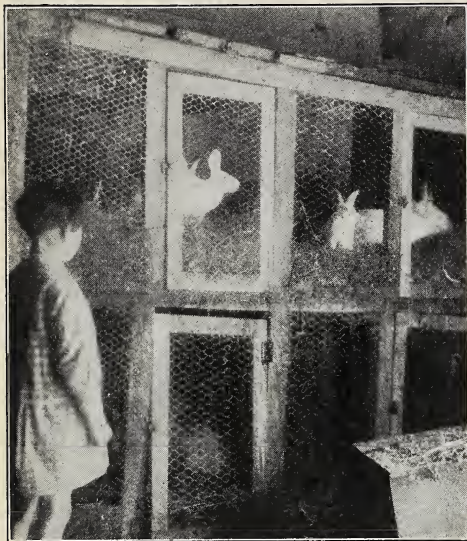


Photo J. Russell Smith

Fig. A. Jean's rabbit hutches by the side of the barn.

(big tame rabbits), each of which raised three families of children last year. Each rabbit weighed about four pounds when it was sold. Jean and Susanne received a little more than twenty cents a pound for their rabbits. That was all the money they had for a whole year; and they saved most of it, for the French begin saving as soon as they begin to have money. Every boy and girl in France is expected to have saved some money while still a child.

There are rabbit hutches in nearly every back yard in the village, and in the next village, and in the next. In summer the rabbits are fed on weeds from the garden and on grass and beet tops from the field; but in the winter the bunnies eat potato parings and the same kind of grain and hay that is fed to the horses and cows. Thousands of people in France and Belgium raise rabbits to eat and to sell, and thousands of tons of rabbit meat are shipped across the English Channel every year. People who work in the

factories of England and Scotland buy many rabbits for food.

Life in the village. When the people come back from the fields in the evening, Jean leads the horses to the town pump to drink. Jean and his father feed the animals and milk the cows. Susanne helps her mother prepare the evening meal, and carries water in buckets from the pump to the house. There is only one well in the village. Each family must send there for water, and often the children play a game of tag around the pump before going home.

There are thousands and thousands of farm villages much like the one where Jean lives, not only in France but in almost every farming section of Europe.

Twice a week Susanne's mother makes delicious sweet butter by churning cream in a hand churn. Some French butter goes to England. The English people are very fond of bread and butter and jam.

The sugar harvest. By October the Ribots have picked up all the potatoes and have planted the potato field to wheat. In November they harvest the crop of sugar beets. The big, sweet roots have grown to be a foot long, and their green leafy tops cover the field. The beet tops are cut off and stored in the barn for the cows to eat in winter. The beets are then pulled up and hauled, day after day, to the sugar factory in a town a few miles from the village.

At the factory the beets are washed and thrown into a slicing machine. The machine cuts the beets into small pieces; and the sugary juice is soaked out in warm water. In the factory the water and juice are put through many vats, boilers, pipes, and pans. Finally the sugar comes out with exactly the same form and flavor as the sugar from sugar cane.

Many wagons bringing beets are at the

factory. Pierre sees some friends he has not seen since he hauled beets last year. He goes home in the evening with a load of beet pulp, which the cows are glad to eat even if the sugar has been soaked out.

Beet sugar in other countries. Sugar beets grow in many countries. Women, girls, and boys are working in fields of beets on thousands of farms in the nearly level plains of northern France, Belgium, Germany, Austria, and Czechoslovakia. Some of the Polish and Russian farmers grow beets, too, and beets are also grown in the United States. Many of the people who work in the American beet fields learned to grow beets in Europe.

THINGS TO THINK ABOUT AND TO DO

New expressions. Use each of the following expressions in a sentence about France: saving money, cultivate, rotation of crops, harrows, furrows, hutch, hare, town pump, slicing machine, vat, beet pulp, divided farm, open fields.

Contrasts. Copy and complete the right-hand column to show the differences between French and English people. Make the list longer if you can.

| ENGLISH | FRENCH |
|-----------------------|--------|
| Explored new worlds | |
| Large population | |
| Manufacture | |
| Find jobs in colonies | |
| Large estates | |

More contrasts. Complete two more columns, this time contrasting "Our Farms" and "Pierre's Farm." Here are some topics to compare: size, homes, neighbors, water supply, cultivation, machinery, scenery, amusements.

Prove. By copying sentences from the book, prove that the French are conservative, agricultural, security loving, home loving.

Pierre's account book. Fill in three columns:

1. Five crops.
2. Home uses of the crops.
3. Crops sold for money.



Fig. A. Sugar beets of the kind Pierre Ribot grows on his farm.

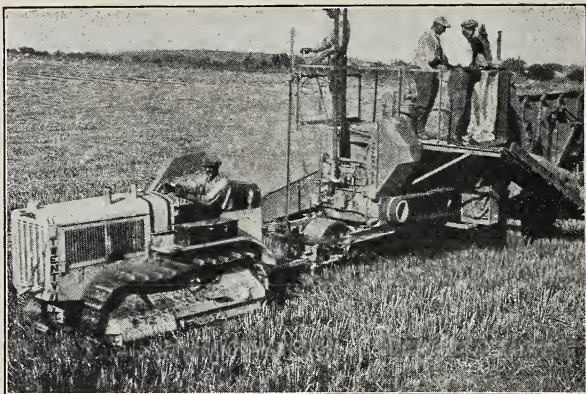
Thrifty Farmer Ribot! Tell how he feeds the rabbits.

- How he feeds the cows; the horses.
- How he pays the miller.
- How he gets money.
- How he fertilizes the farm.
- How he gets farm labor.
- How his children help.
- How his farm gives food for the family.

Sugar from beets. Write a sentence for each of the following topics:

- Fertilizing the beet field.
- Cultivating the soil.
- Planting.
- Weeding.
- Harvesting; hauling; making sugar; using waste.
- List countries that raise beets in Europe.

Begin a map of France. Show the Channel, the white cliffs of England, the seas near by, the Paris-London-Berlin routes. Place a dot for Pierre's home; shade in green the plains where other people like Pierre live.



Courtesy Caterpillar Tractor Co.

Figs. A-B. The old and the new in France. At the left some peasants in Brittany are harvesting wheat and threshing it with the help of horses. Above, a tractor is pulling a combined harvester which cuts the wheat, threshes it, and puts it into bags at the rate of about 200 pounds of grain a minute.

FRENCH FARMS AND FORESTS

Why so many farms? There are three reasons why the French are more nearly a nation of farmers than are the British or the Germans. One reason is that they do not have much coal with which to run factories. France has only one fiftieth of the coal of Europe. Britain and Germany have twenty times as much as France.

Another reason that the French have kept on being farmers is that their country is excellent for farming. Most of it is low plains, level enough to be plowed year after year without much danger of washing away. Most of the soil of France is fertile, and the climate is favorable to the growing of crops. There is enough rainfall, but not too much; bad droughts are rare; famines are unknown. The winters are not too cold; the summers are not too hot. The climate is much like that of Great Britain, only it is a little warmer.

Different parts of France have different kinds of climate. France can therefore produce a variety of crops and give the people many different kinds of food. This

you will discover as you study the five agricultural regions of France. Make constant use of the maps as you study these regions.

1. North central and northeastern France. This is the part that is most like Great Britain and Germany. The French part of the great low plain of central Europe is a splendid land for wheat, potatoes, beets, and garden crops. In this plain are thousands of farm villages and hundreds of thousands of workers going back and forth each morning from their village homes to the many little patches of land. In this plain also is Paris, the capital of France. Here, too, are the factory cities of northern France, all close to the excellent food supply.

2. Northwestern France. This is close to the sea and receives more rain. Perhaps you know an American soldier who spent a winter in northwestern France. He could doubtless say many unpleasant things about the fog, the rain, and the mud. But the fog and the rain make excellent grass; and Brittany (as northwestern France is called) has many market



Fig. A. Grapes in the Côte d'Or. What will be done with these grapes after they are picked?

gardens and also many dairy farms sending butter, cheese, and meat animals to city markets.

3. The French corn country. Only one little corner of France can grow corn well. Central and northern France are too cool for corn, but southwestern France has enough heat and enough summer rain to let corn be a crop in that part of the country, along with wheat and clover and hay and grapes.

4. Mediterranean France and the wine industry. You learned (page 56) about the Mediterranean climate and how it suits the grape and the olive. The parts of France near the Mediterranean have many olive trees, and produce half of the French wine. France is the principal wine-making country in the world. The grape likes a long, warm summer, and southern and central France have that kind of summer. One great district is near the Mediterranean and another is near Bordeaux. In the winter and spring the French vine growers are busy pruning

grapevines. Then they tie the vines to the stakes which support them. All through the summer they cultivate the vines and spray them to keep down the fungus. In the autumn comes the busy season of picking grapes and pressing out the juice for wine.

Burgundy. The most famous of the French wine districts is in what was once the old kingdom of Burgundy, near the city of Dijon. The place is called the Côte d'Or, "side of gold," meaning the hillside of gold. This place is so far north that grapes do much better on the hillsides facing south. The grape plant is particular about soils, and the hillsides in this part of Burgundy that have a certain kind of soil produce wine that is very highly prized; therefore the name, "the hillside of gold."

Flowers and perfume. France has another crop that shows French skill. On the French Riviera and the near-by parts of southern France, millions of dollars' worth of flowers are grown each year to be

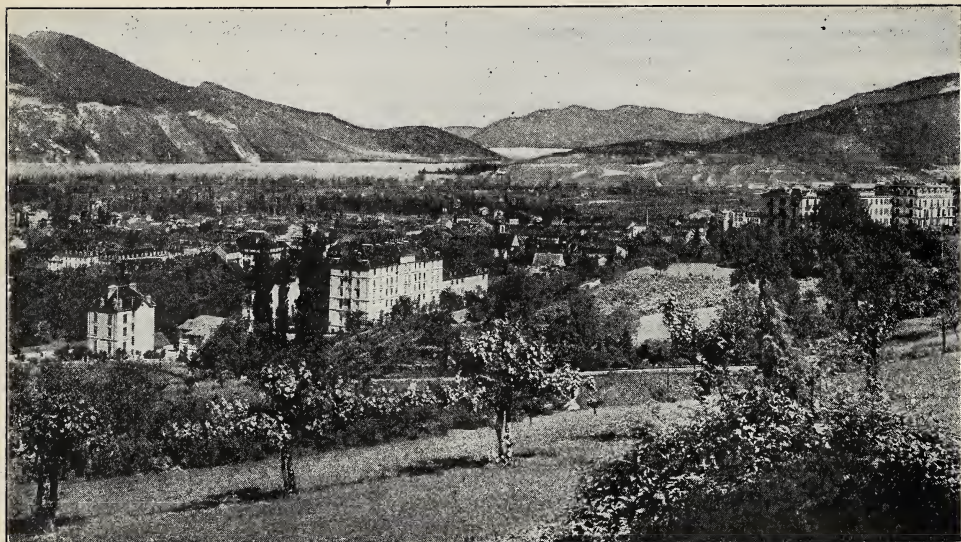


Fig. A. In the French uplands. The town in Aix-les-Bains, located about midway between Lyon and the Italian border.

used in the manufacture of perfumery. French lavender, French violet water, and many other perfumes carry the real fragrance of the great baskets of flowers which are shipped to the perfume factories.

5. The French upland farms. What part of France has highlands? How high are they, and how high are the Appalachians of Pennsylvania? In each of the three French uplands, namely, the central highland, the French Alps, and the Pyrenees, we find the mountain agriculture about which we have already read (pages 59-61)—pastures, chestnut orchards, with forests above them producing timber for a crop. The central highland of France, with its cool climate and rough land, produces buckwheat and rye. These two grains grow in rough land with cool summers, and help man to make better use of such lands than would be possible if he tried to grow wheat.

French thrift and crop trees. For hundreds of miles you may ride along good roads in France and pass rows of tall

trees. Sometimes the trees have all the side limbs cut off except a little bunch at the top. This is a regular system. About every ten years the side limbs are cut for firewood, and after a man has done this three or four or five times, his son may cut the tree down and have it as a saw log to make some planks to repair the old barn which his grandfather or great-grandfather built. In other places the tree may be a fine, round-topped tree, such as the English walnut. In still other places we see walnut trees scattered over the fields. The farmer plows his field and grows his crops under a walnut tree as if it were not there. Each year thousands of pounds of walnuts are sent from Bordeaux and Marseille to the United States.

Thrift and the forests. A hundred fifty years ago the French people had cut the forests from many of their hills and mountains. Gullies were carrying the soil away and promised soon to ruin the country. The French kings ordered trees planted, and now France has some of the

most carefully tended forests in Europe. In the southwest, along the coast of the Bay of Biscay, there is a forest of pines larger than the State of Delaware. Most of it was planted on land that was so nearly pure sand it blew about as sand dunes, and was worthless until the French were able to make trees grow there.

The turpentine from these trees makes France second to the United States as a producer of naval stores. From the time the trees are old enough to yield turpentine, the French tap the pine tree from time to time. When mature, the tree is made to bleed itself to death for the turpentine, and then used for lumber or sent across the sea to be used as a prop in a British coal mine.

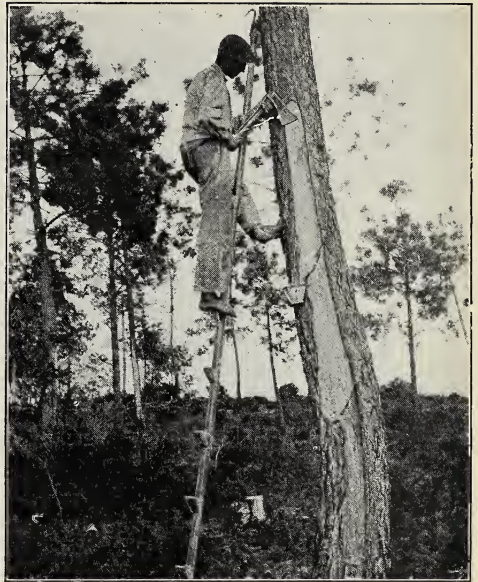
THINGS TO THINK ABOUT AND TO DO

Little coal. Draw a bar $6\frac{1}{2}$ inches long. Blacken $\frac{1}{8}$ inch of it to show France's coal supply; color differently $\frac{2}{8}$ inches of it to show Great Britain's; $\frac{2}{8}$ inches to show Germany's; $\frac{3}{8}$ inches to show the supply of the rest of Europe. Under the bar, write one reason why France manufactures less than Great Britain or Germany.

Continue your map of France. Draw a line for the Rhone, dots for Bordeaux and Dijon. Shade in green all the lowlands; in brown or yellow, all the land that is above 1,200 feet. Make some mark to show land that is above 3,000 feet. Draw arrows to show the wet Westerlies; write small black *M's* where there are Mediterranean crops; *F's* where there are farms like the Ribots'; *D's* where there are dairy farms; *C's* where corn grows; *T.P.* where there are trees and pastures; *G's* where there are grains. Below your map write a key telling what the initials stand for.

New words. Use each of the following expressions in sentences about the land of vines and flowers: fungus, Riviera, pruning, spray, pressing, Côte d'Or, perfume factories.

"The land of farmers' delight" might describe France. Write a sentence about each of the following to show that this is so: surface, soil, rainfall, temperature, variety of climate, markets for crops, people's energy.



Courtesy U. S. Forest Service

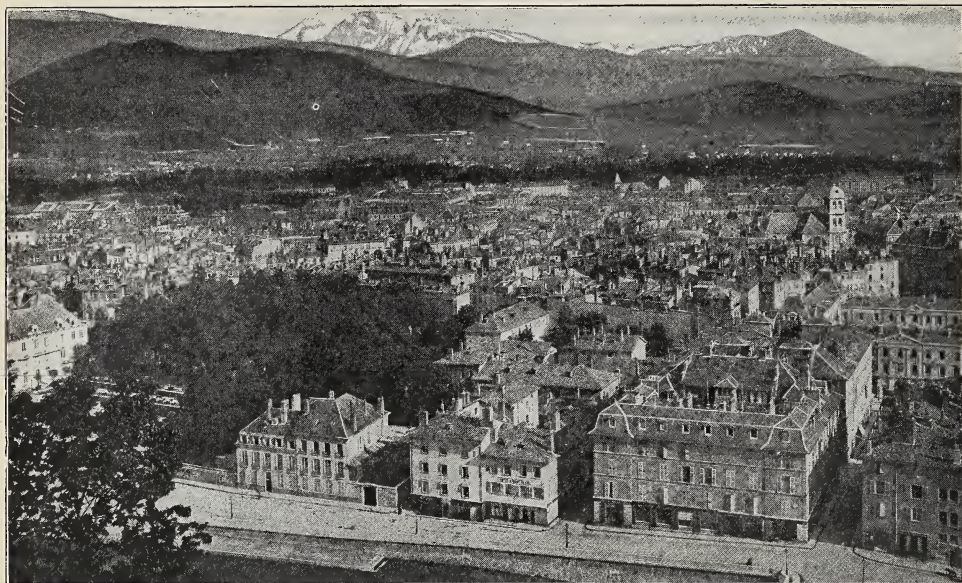
Fig. A. This French pine-tree farmer is chipping one of his pine trees. The sap of the tree will run into the cup. Turpentine will be made from the sap.



Photo J. Russell Smith

Fig. B. This French road is lined on both sides with "English" walnut trees producing about 100 pounds of nuts each a year. Tell how the picture shows an example of French thrift.

Fifty years ago. Fifty years ago a French farmer planted a row of trees. Explain how they gave shade, firewood, lumber, food, money.



Courtesy The French Line

Fig. A. The French city of Grenoble (Fig. 92-A [P-3]). Answer from this picture the question asked about Grenoble on page 143.

FRENCH MANUFACTURES

Raw materials. France is poor in coal, but she has more than one half of the iron of Europe. Most of it is in Lorraine (page 128). In Alsace, near the upper Rhine, there are mines producing potash. These, with coal, pottery clay, wood from her forests, and bauxite, the ore for making aluminum, are the only important raw materials produced in France. She imports all of her cotton, twenty-four twenty-fifths of her silk, five sixths of her wool, and most of her flax and hemp. She also imports forty-nine fiftieths of her oil, and millions of tons of coal each year.

The most important coal field is in the north, and extends under Belgium into Germany (page 128). This part of France might be called both her Pittsburgh and her New England, because the coal that underlies this part of the plain has caused the surface of the plain to be dotted with manufacturing cities. These

cities have industries in iron, steel, machinery, and woolen and cotton goods. Lille is the greatest textile center.

Iron and steel. Nature is trying to make partners of France and Germany. France has great iron-ore districts; Germany has but little iron ore. Now, iron ore can only be made into iron by the use of coke, and most of the coal of France does not make good coke. The German coal in the valley of the Ruhr makes excellent coke. This is a reason that the two countries trade coke for ore. It shows a reason why the steel makers of the two countries have formed themselves into a great organization for foreign trade (page 133). A small coal field in south central France supports an iron and steel industry at Saint-Etienne. Strasbourg and Metz, in Alsace-Lorraine, have an iron industry using German coal (page 128).

Water power. France has much water power, more than any country of western

Europe except Norway and Sweden (page 165). Since the World War, she has built nearly a million horse power of hydro-electric plants; Germany built a million; Switzerland a million and a quarter and Italy over three million. The water-power plants of France turn out nearly twice as much electricity as those of Great Britain and Germany combined. France is fortunate, too, in that she has coal at the north, water power at the east, center, and south. Water power is excellent for textile mills, which are so important in France. How do the locations of Lyon and Grenoble (Figs. 92-A and 142-A) help to tell why they have good power for their mills?

The French plan to carry the electric current from mountain power plants and northern coal mines to all parts of France, except the northwest. The government hopes by this means to take industries to small towns and villages, because they are more pleasant places in which to live. The people of France have become worried because people are moving into the big cities to do manufacturing work, and the population is declining in nearly all parts of the farming districts. As I travel through France, I often see one or two tumble-down houses in each village. No one now lives in them, so why patch the roof? The owners have gone to work in a city.

Silk and other fine textiles. For hundreds of years, some silk has been produced in the Rhone Valley, and the weavers of Lyon have made it into beautiful cloth. Lyon was a natural place for the big power-driven silk factories to grow, and it is now the greatest silk-manufacturing center of Europe. Most of the raw silk used in French silk factories comes from Asia (page 238).

The artistic French make textiles of good

quality, of beautiful color, and of pleasing design; so more than a fourth of the French export is of fine textile goods — silk, wool, cotton, and fine clothes. About one fourth of the value of her total import is wool, cotton, silk, flax, and hemp.

Trade and national policy. France has nearly as many people as Great Britain and less than half as much trade. She is sometimes spoken of as a country with *balanced industry*. She grows most of her own food, most of her own wood, keeps up her agriculture, does not increase her population much or her industries as much as many other countries. She is sure that by so doing she is safer than a country that must depend on foreign markets. It is easier to lose a foreign market than to lose a forest or a fishery, or a field, especially if the field is as well cared for as are the fields of France.

THINGS TO THINK ABOUT AND TO DO

Draw another map of France. 1. Draw a black ring around Lorraine; a red ring around her coal fields; blue rings where France has water power. Place dots and one initial for her larger cities. Below your map, keep a symbol key.

2. Write the reason, shown on your map, for the location of cities; for the absence of cities in the southwest.

Pretend. 1. Pretend that Jean Ribot is thinking of giving up farming and moving to the city. Write or tell: where he would find work; the kind of work; why his father did not think of going long ago; why the rest of the family wants to stay in the village; how both Jean and the family may have their way.

2. That an Englishman and a Frenchman each tells about foreign trade in his country.

3. That you are the mayor of a French village 100 miles from the Alps, and give a talk about water power.

4. That you are a silk manufacturer of Lyon, showing an American traveler through the factory.


France goes to market. France goes to market with money to buy raw materials. List the things she sells for money; the things she buys.



© Ewing Galloway

Fig. A. The port of Marseille. See the long breakwater which forms a big dock in which the ships lie. The rolling-to-hilly country near the city shows in the background of the picture.

COASTS AND PORTS

 Examine the maps (Figs. 88-A and 92-A) and answer these questions: Why does France have a location good for fisheries and foreign trade? Why is it easy for French goods to reach the sea?

Fisheries. The waters of the Atlantic Ocean bordering France and the waters of the North Sea are rich in fish. Thousands of fishing boats sail from the western and northern coasts of France to catch herring in the North Sea; others catch sardines which the women of Brittany spread on trays to dry. Some French fishing boats go each year to the Grand Banks near Newfoundland to catch cod. They dry them on the shore of Newfoundland.

Mediterranean ports. Each of her three coasts has a great port and also smaller ones. At the south is Marseille, the second city of France, with steamship lines reaching all continents. It is near the olive regions of France and has long been

an oil market. France also has a large import of oils and oil seeds. Mills crush the seeds and get the oil, some of which is made into soap in the factories of Marseille. The city is near the mouth of the Rhone River, but the muddy delta is not a suitable place for a city; so the port is some twenty-five miles to the east on firm land. Boats from the harbor of Marseille reach the River Rhone through one of the most remarkable tunnels in the world — a ship tunnel four and a half miles long, seventy feet wide, and having a waterway ten feet deep. Toulon and Nice are smaller Mediterranean ports.

Atlantic and Channel ports. Bordeaux is the great port of the west. She is a great wine exporter; imports wheat, coffee, chocolate, and other materials, and has flour mills, sugar refineries, chocolate factories. Her smaller neighboring ports, Nantes, Saint-Nazaire, and Brest, receive the trade of smaller ships and fishing boats.

On the English Channel, Cherbourg is

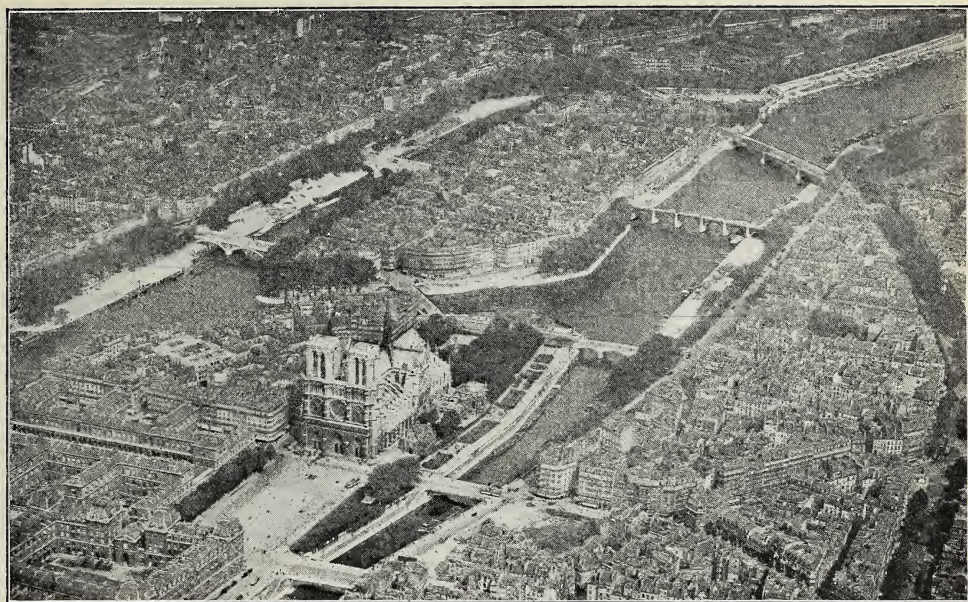


Fig. A. The *Ile de la Cité*, in the heart of Paris. The large cathedral in the picture is Notre Dame. The river is the Seine. You are looking eastward across the city. *La Cité* (the City), as the French people call the nearer island, was the site of the original settlement of Paris.

a port of call for the fastest steamers in the world, which, by stopping at this city and at Southampton, can put travelers on trains that run swiftly to London and Paris. Havre is the great freight port for Paris. Barges take goods from the ship's side in Havre, and deliver it to the riverside factories or trucks in Paris. They also deliver cotton at Rouen and help to make it an important manufacturing city. Every day boats cross the English Channel to Boulogne and Calais, as well as to Havre.

THINGS TO THINK ABOUT AND TO DO

A trade map. Draw a map of France free-hand in your notebook. Write the names of the surrounding waters. Draw lines for the Seine, Garonne, and Rhone rivers. Show by dots and initials: peninsula of Brittany, Marseille, Bordeaux, Havre, Cherbourg, Boulogne, Brest. From these places, draw lines showing ships' routes. Write along the proper lines: oils, wines, travelers, fish, English trade, silk cloth, raw silk.

PARIS AND TOURISTS

How Paris began. Long, long ago when France was mostly woods and was beset with many robbers and little wars, some people built a fort and made a settlement on a small island in the River Seine. Islands are safer than river banks. That island is called *Ile de la Cité*; it is at the center of Paris, the capital of France. How did it happen that a small settlement on a little island grew to be a great modern city? There are many reasons. Consider first the valley of the River Seine. This wide, gently sloping valley, called the *Paris Basin*, is the richest agricultural valley of France. It could produce more than enough food for a huge city.

Paris a center of water routes. In the old days of muddy roads and no railroads, a river like the Seine, on which boats could go, was the great water route which permitted goods to pass freely from place to



Courtesy U. S. Army Air Corps

Fig. A. Paris is said to be the most beautiful city in the world. The circle about the Arc de Triomphe (Arch of Triumph) is called the *Place de l'Etoile* (the Place of the Star). Why is it well named? See the broad tree-lined boulevard.

place. Cities cannot live without freight. To see what a highway the River Seine really is, you should stand on its banks in Paris some day and see the barges that have come from many distant places to bring freight to Paris. There are barges from the seaport of Havre, loaded with British coal, American cotton, Finnish lumber, and a thousand other things. You will also see cargoes of sand, stone, cement, wheat, wine, and coal from the north of France. These are on barges that have come down the Seine and its branches and along the canals that connect the Seine with other rivers. Paris is a center for rivers and canals. This is another reason why the little island settlement grew.

On a great through route. Paris is also on a great open north-south route. The easy way to get from the shores of the English Channel to southern France, Italy, or Switzerland is up the valley of the

Seine, through a low opening near Dijon, and down the Rhone Valley. Through this gateway went migrating peoples; Roman legions; canals, railroads, and automobile roads—and Paris was and is on the route of all this travel. It is a natural stop for thousands of English and American people on the way to their beloved vacations in Switzerland and Italy.

Paris the railroad center. If you do not go by airplane, the quickest way to go from New York to Istanbul is to take a fast steamer from New York to Cherbourg. A special train will meet your steamer and take you whizzing past a hundred little towns, and will scarcely stop until it lands you in Paris. There you can take the Orient Express, which whisks you across the rest of France, under the Alps, across northern Italy, Yugoslavia, and Bulgaria. Even the quickest way to get to Berlin is to go by way of Paris.

The capital of France. Long ago the

kings of France chose Paris as their capital. In the seventeenth and eighteenth centuries, the kings of France adorned their capital with palaces, public buildings, parks, and boulevards. These may still be seen and are much enjoyed by visitors to Paris.

The French Government makes a big city. If you live in the United States, you have a state capital. There the state legislature meets to make laws for the state. In France these laws are made in Paris. In your capital city you will also find a governor, a state superintendent of education, and many other state officers. Your county has a county superintendent of schools, a county treasurer, a tax collector, and many other county officials, including in most cases a man, with assistants, in charge of the county roads.

In France much of this work is done in Paris. So we say that France has a *centralized government*, even though it is a republic. All this government work requires many government officials and many government clerks. It helps to explain why Paris is four times as large as Marseille, the second city of France.

The thousands of employees of each of the various ministries need a large building, perhaps several buildings. Paris has grown rapidly, like Berlin and New York.

Beautiful buildings and boulevards. The French, being an artistic people who love beauty, have laid out their new Paris with beautiful streets. Long ago Paris had a wall. In time the city grew outside the wall. The wall was then torn down, and in its place was made a wide street or boulevard. At a later time, another larger encircling street was made. Upon the new streets the French have erected many beautiful buildings, including apartment houses, shops, hotels, banks, theaters, art galleries, and museums.

Art galleries and art schools. Paris has famous art galleries, where one may view not only the work of French artists, but paintings and sculptures made by artists of many countries. France bought some of the works of art, and some her kings captured when victorious in war.

In a city where many artists are, it is but natural that there should be special schools for artists. The School of Fine Arts is one of these. Sometimes a student in an American art school wins the honor of a fellowship or a prize that entitles the winner to study in some French school of painting, sculpture, or architecture.

The University and the foreign students. Paris has the great University of the Sorbonne with 30,000 students, of whom 8,000 are foreigners, the College of France, and many other schools of higher learning to which the people come from all parts of France and from many foreign countries. There recently was built a great student center, where students of foreign countries may live while they study in one of the great schools in Paris. In this student center, the youth of different countries can become better acquainted.

A travel center. Many people go to Paris to be entertained and amused. The French are a gay people. In the warm season they live much out of doors. There are cafés where you can eat your dinner on the sidewalk or under the trees. On the streets there are Punch-and-Judy shows for children. There is much music in Paris — perhaps furnished by the café where you get your dinner, perhaps it is the grand opera which the government helps to support. There are also many theaters. Some of them give plays in English, German, Italian, and other foreign languages.

Art goods and manufacturing. Nearly everyone who travels wishes to take home

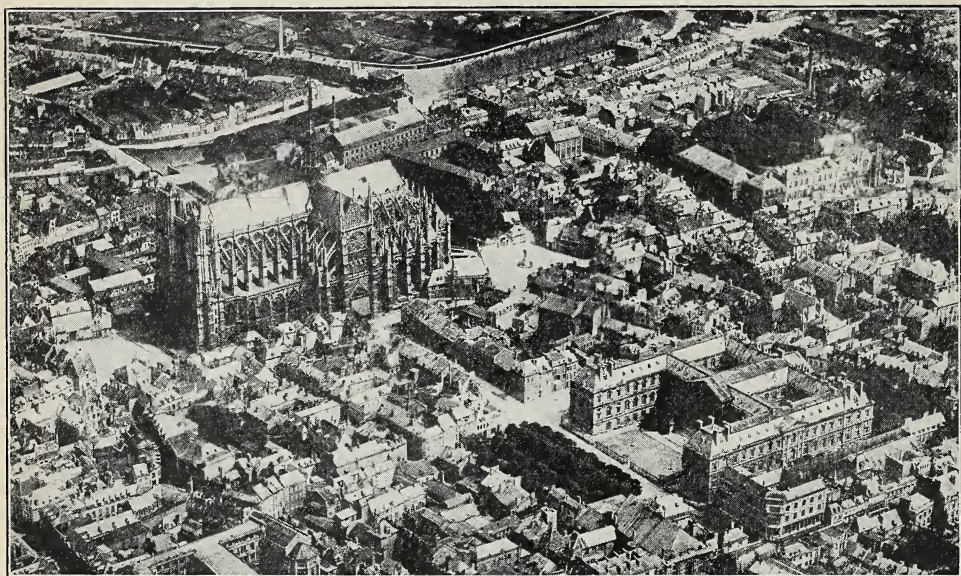


Fig. A. An airplane view of Arras, France. How many kinds of buildings do you see? What is in the middle of the square in front of the cathedral? Several generations of men worked on the cathedral.

presents to family and friends; in Paris you can buy a greater variety of beautiful things than in any other city in the world. Besides her thousands of small shops, Paris has many factories like those of England, Germany, and the United States. Some are along the Seine where boats can serve them; some are in the suburbs where land is not expensive; many that make clothing and other light products ("Paris goods") are crowded into the city. Twice a year, buyers for stores come to Paris from the cities of France and many foreign countries.

The Riviera. The beautiful and interesting Riviera (page 72), the California and Florida of Europe, is the most popular winter resort of Europe.

THINGS TO DO AND TO THINK ABOUT

A picture study. Examine Figures 145-A and 146-A. Tell several reasons why Paris has been judged the world's most beautiful city.

Roads that lead to Paris. On a sketch

map of Europe, draw a black line around the Paris Basin. Draw blue lines for water routes: along the Seine to Havre; along the Rhône to Marseille. Draw black lines for land routes: through Dijon to Marseille; to Switzerland; to Italy; to London; to Istanbul; to Berlin.

Give reasons. Give reasons for the growth of Paris:

1. A location reason.
2. A water-route reason.
3. A land-route reason.
4. A surface reason.

Why go to Paris? Let each pupil choose and explain the reason for wanting to visit Paris: supposing you love art; supposing you intend to study architecture; you want to go to a good university; you are a buyer for a department store; you want to meet people from foreign lands and speak their language; you want travel and amusements. If you are sick or tired, or want to escape the cold of winter, where would you go from Paris?

"Depend on your own land" might be a good French motto. 1. How does France depend on herself for food? wood? jobs?

2. What is the name for this policy?

3. What countries which you have studied prefer to depend on foreign trade for food, wood, etc.?

BELGIUM

A little land of many people. Belgium is one fourth the size of Pennsylvania and has nearly as many people. There is on the average more than one person to the acre — four times as many people to the square mile as Europe has on the average. Why do so many people live in this little country? Three short paragraphs will answer the question.

1. A fine agricultural land. Rain in Belgium is very regular and there is just about enough for growing many crops. She has the same good climate as has the north of France, and she grows the same products, from beets to bunnies (page 136). Most of Belgium's land is nearly level: it does not wash. The soil is deep, moist, rich, well fertilized, and cultivated to the last inch. The flagman at the railway crossing often cultivates a little garden on the land beside the railway track, when he is not otherwise busy.

2. Minerals. For a long time Belgium has had mines of coal, iron, lead, and zinc, and the coal enabled her to smelt the ores. Now her lead and zinc mines are almost exhausted, but she imports these ores by the shipload from Australia and many other countries. Her iron mines do not yield much ore, but she has coal and now imports millions of tons of iron ore for her most important industry. Her greatest industries are steel, machinery, glass, textiles, and cement. Belgium exports these products of her factories to many countries.

3. A splendid location for trade. Belgium is near the eastern end of the most traveled of all waters, the English Channel, and is on the North Sea. Anvers has been a great port for centuries — she has an excellent harbor for ocean ships; whole farms have been scooped out to make docks for sea-going ships; canals connect this harbor with the Rhine, the most

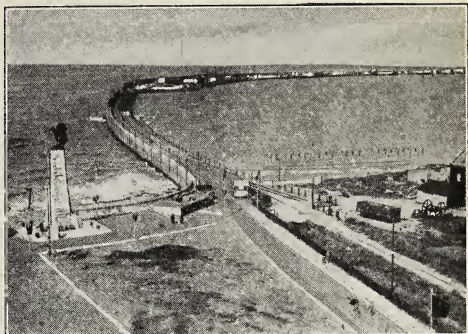


Fig. A. At Zeebrugge, Belgium, is this quarter-circle mole or breakwater. It protects the entrance to a canal which connects Bruges (Fig. 92-A [P-2]) and the River Scheldt with the sea.



Fig. B. Belgium and the Netherlands are crisscrossed by many canals. This canal passes through Bruges. The famous Belfry of Bruges rises in the background.

traveled of the long commercial rivers. Because of her good location, Anvers handles some trade for France, for Switzerland, for Germany, and for other countries in central Europe. Belgium is on the east-west route between Germany and the manufacturing region of northern France. She also shares with Holland the commercial privilege of being the gateway to the Rhine Valley.

The nearly level land of Belgium makes it easy for her people to build roads, railroads, and canals. She has 516 miles of railroad for every thousand square miles of land — more than any other country in the world — and she has the cheapest railroad fares in Europe.



Photo J. Russell Smith

Fig. A. The work dog and peasant woman, pulling side by side, brought this wagonload of produce from the country district to the city markets.

Cities and towns. Bruxelles (Brussels), the capital, is a fine city. It is so much like Paris that it is sometimes called a *little Paris*. French is the language of the city. What American cities have about the same number of people as Bruxelles and Anvers? Anvers is an important center for diamond cutting and also for African goods from the Belgian Congo. Liège and Charleroi are centers for making steel and glass. Many Belgian factory workers live in farm villages and cultivate some land, and go several miles to their factory work.

Problems for the future. There are so many people in Belgium that the wages of her workmen are low, and she must import both food and raw materials. Her coal mines are already three thousand feet deep — probably the deepest in the world. Huge piles of refuse stand like mountains above the plain. Her coal miners are working narrow seams, such as are often wasted in the United States, and she has begun to import coal. The Belgians also have the difficulty of having two languages

in different parts of the country, French and Flemish.

Luxembourg. This little country is a left-over from the days when Europe had several hundred states. It was not claimed by France or Germany. It is ruled by a Grand Duke or Duchess and an elected Parliament. Belgian money is used and so far as trade is concerned, it is a part of Belgium. The people voted for an economic union. It is not quite so large as Rhode Island, and has 301,000 people, most of whom are farmers, miners, or steel workers. The iron mines yield as much ore as those of Germany. Some of it is exported, but Luxembourg furnaces make one third as much iron as do those of Great Britain.

THINGS TO THINK ABOUT AND TO DO

Three piles of reasons. Separate these jumbled expressions into three columns so as to give reasons for the dense population of Belgium. You may place the same expression in more than one column. On N-S and E-W trade routes; beside English Channel and North Sea; soil is moist; use minerals in factories; land level; can build roads; canals connect with Rhine; has minerals; regular rain; soil deep; good harbor; soil rich.

Guessing riddles. "It is a Belgian city. Canals connect it with the Rhine. What is it?" "It is a mineral far underground. It is nearly exhausted. What is it?" Make up other riddles, each giving two facts for: Rhine River, English Channel, North Sea, canals, iron, Bruxelles, beets, etc. See if the class can guess your riddles.

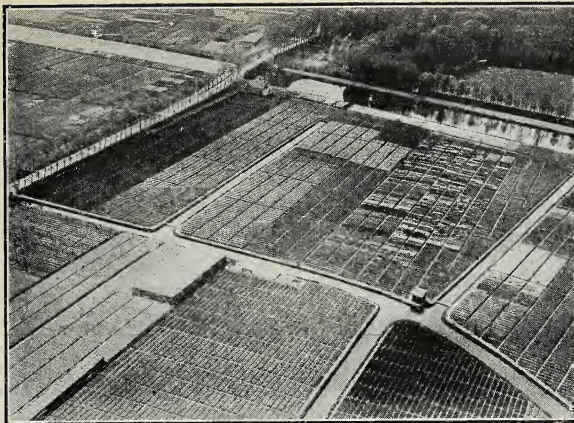
More columns. Copy and fill in the following columns with names, words, or short expressions to describe Belgium:

| Farm Products | Minerals | Manufactures | Cities | Trade Routes | Exports | Imports |
|---------------|----------|--------------|--------|--------------|---------|---------|
| | | | | | | |

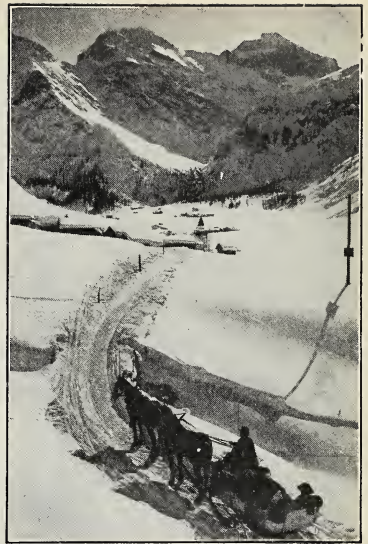
CHAPTER SUMMARY

Your first study question. Think of several ways in which France and Germany are different and give reasons for the differences.

Your second study question. How do plains, mountains, and surrounding waters affect French life and occupations?



Figs. A-B. Contrasts among the small nations of Europe. The picture above shows bulbs growing on the flat lands of Holland. The picture at the right is a village in Switzerland in winter.



FIVE THRIFTY SMALL NATIONS

THE NETHERLANDS AND DENMARK, SWITZERLAND, SWEDEN AND NORWAY

Divide the class up into teams. Let each team make a poster or a pageant to show the life and work of the people of one of the five thrifty small nations. Have a competition when the chapter is finished.

Study the map. Look carefully at the five countries (Fig. 88-A), and find the elevation of the land. How many are mountainous? How many are of low altitude? What can you tell from elevation alone about the appearance of the country and the occupations of the people in each one of these countries? Is the location of all of these countries equally good for trade? for shipping?

Make a table to show the population of the five countries presented in this chapter.

Government. Switzerland is a republic, with a very honest, good government; the Netherlands has a queen; the other three have kings, and they all have very

good governments. As in Great Britain, the countries with monarchs are really ruled by an elected parliament.

Three of these five thrifty little countries are mountainous; two are flat, with level farmlands. In Part I of this chapter we shall study about the flat pair; in Part II, the three that are mountainous.

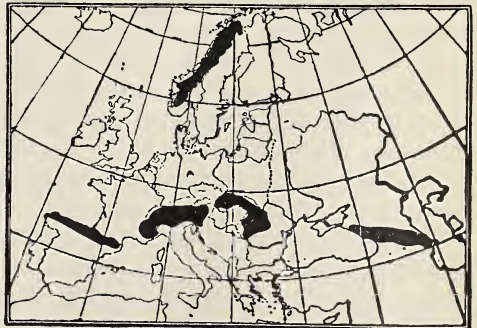


Fig. C. High mountains of Europe. Some of the "Five Thrifty Small Nations," as you see, are mountain countries. Find each of these mountain groups on Figure 88-89-A and Figure 6-7-A. Tell the name of each group.

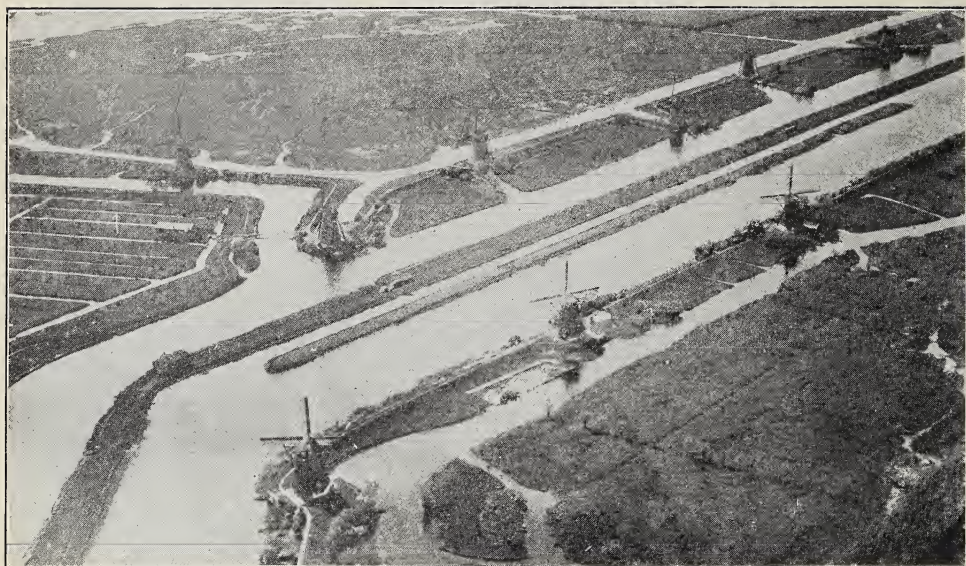


Fig. A. A striking air view of canals and windmills in the fertile *polder* country of Holland. All this land has been reclaimed from the sea. Why are the windmills there?

PART I. THE FLAT PAIR—HOLLAND AND DENMARK

HOLLAND or THE NETHERLANDS

"Wits and work." The Dutch people live in Holland, but the official name of their country is *The Netherlands* (lowlands).

One day I talked with a Dutchman as he stood at his post selling wheat on the Bourse in Amsterdam. To me he spoke excellent English. He turned and spoke French to another man; to a third he spoke German; to a fourth, Dutch. The Dutch must speak the languages of many other peoples with whom they need to do business. This shows that the Dutch people have to use their wits to make a living in their little, crowded country.

The Dutch are a well-educated and industrious people. They are famous at home and abroad for being good workers. "Wits and work" might well be the national motto of The Netherlands.

Land below the sea. More than any other people in Europe, the Dutch have

had to work to make their land before they could use it. The level part of Holland is sinking slowly, a few inches every century. The Zuider Zee became a sea after the year 1100. In the fourteenth century the Dutch began to build banks of earth near the shore around parts of the shallow sea. The banks of earth, called *dikes*, kept the sea back. With pumps the Dutch pumped the water from the part inclosed by banks. The sea bottom, called *polders*, was then used for farms.

The water that is pumped from the fields runs into canals. At low tide, canal gates are opened and the water runs out into the sea. Then, with windmills or coal-driven engines, the water from the lower lands is pumped up into the canals to go out at the next low tide. Since 1615, the Dutch have added over 1,000 square miles (9.3 per cent) to the area of their country. They have taught the world how to drain land.

Cows and bulbs. The Dutch use their land very intensively. Their big black-and-white cows eat linseed meal from the United States, wheat bran from North America, South America, and Australia. They give a great deal of milk. The Dutch make excellent butter and cheese.

A Dutch gardener takes an acre of land and on it raises wagonloads of flowering bulbs, which are sent to many countries. The Dutch raise millions of little fruit trees and ornamental trees for export. They buy millions of pounds of coconut oil and cottonseed oil, which they churn with skimmed milk to make *margarine*, a butter substitute. In fact, they make even more margarine than butter. The Dutchman often exports the butter he makes and the family eats the cheaper butter substitute. These are some of the means by which this thrifty and industrious people make a little land do a great deal of work and support many people. As I rode on the train from Rotterdam toward the German boundary, I passed many new factories and saw potatoes, beets, peas, spinach, cabbage, lettuce, beans, wheat, oats, and turnips growing on the level land. I saw a long, low glass house where flowers grew — and a man was standing in his yard watching ducks swimming in a canal.

Food and money from the sea. For centuries the Dutch in their fishing boats have caught herring and cod in the North Sea. They export some fish. For centuries the Dutch have been sailors; they now have a big commercial fleet of steamers which carries freight for people of other countries and gives jobs to many Dutch sailors. Such a fleet is an investment for people who have saved money.

Fine manufactures. Having been without good coal, while Belgium was developing her iron, cement, and glass manufactures, the Dutch have not, like their



Fig A. The Barring Dam, 20 miles long, has made the Zuider Zee an inland lake. Read again "Wits and work" and tell about the Polders.

neighbors, the Belgians, developed an iron industry. Instead, they have developed skilful arts, like making fine machinery, fine textiles, and cutting diamonds. During the World War, when they could not buy enough coal anywhere, they began to dig for it more earnestly. Deep down, close to the boundary of Belgium and close to Germany, the Dutch found a good coal field. This now almost supplies their needs with coal. Manufacturing has increased.

Find three cities in the United States that are about the same size as Amsterdam, Rotterdam, and 'sGravenhage (The Hague).

Rotterdam, a great port. Rotterdam is built on the soft, jellylike mud brought down by the River Rhine. A heavy wagon going over cobblestones shakes the houses on both sides of the street. To keep the buildings from sinking in the mud, logs were driven into the ground beneath the foundations; almost every wall in Rotterdam stands on the ends of buried logs. Many of the logs came down the River Rhine from the forests of Germany and Switzerland.

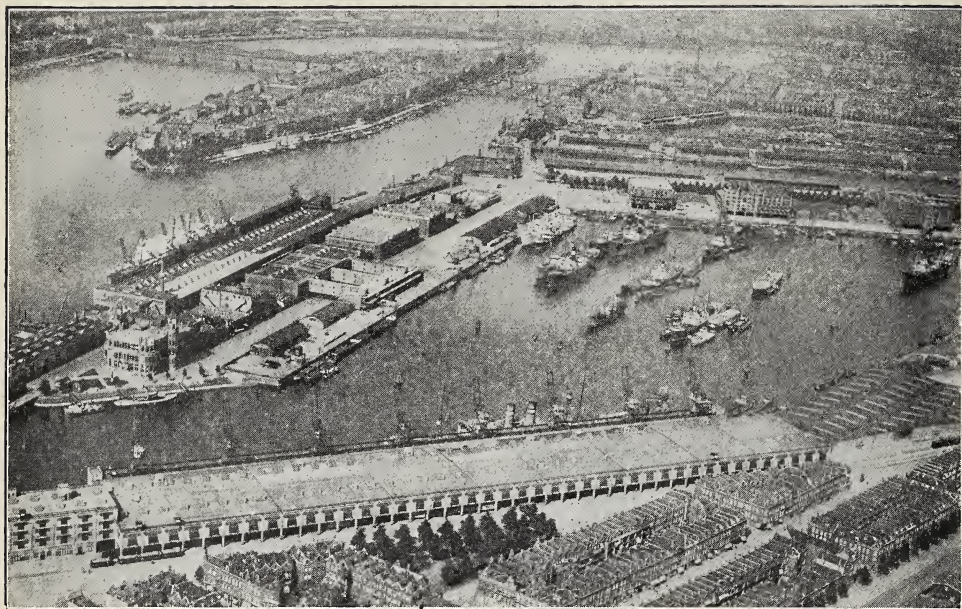


Fig. A. Air view of the docks at Rotterdam. Tell what you see in the picture. Find Rotterdam on Figure 88-A.

Ocean steamers, lying in the harbor of Rotterdam, will often have two or three big canal barges on each side, and beyond the canal barges will be little boats. The barges are taking freight to Amsterdam, the Dutch port on the Zuider Zee, or to towns in Belgium, or to ports on the River Rhine in Germany, in France, and in Switzerland. At Rotterdam, Dutch, German, English, and American steamers load and unload cargoes to or from all continents. Rotterdam has many canals which are used for streets. Little canal boats carry goods from ships to warehouses in other parts of the city; they also go out into the many canals that cross Holland in many directions, carrying goods to a hundred little towns.

Trade and transportation are important ways by which many Dutch support themselves in their rich little country.

THINGS TO THINK ABOUT AND TO DO

New words. Use the following new words

in sentences about The Netherlands: Bourse, polder, windmill, diking enterprises, dam, delta mud, barge, margarine, textiles, drain land, imported cow feed, Zuider Zee.

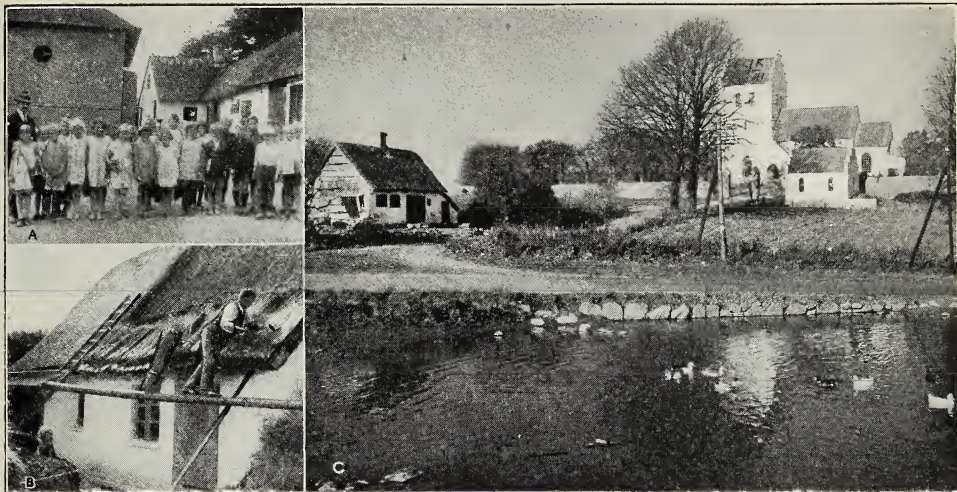
Draw a free-hand map of The Netherlands. Show her neighbors; let arrows show how the strong westerly winds blow. Locate by initials: Amsterdam, Zuider Zee, Rotterdam, 's Gravenhage, Rhine, coal fields.

Rich food for cows makes good milk. Copy and fill in this table:

| FOOD | IMPORTED FROM | MADE FROM | DAIRY PRODUCTS |
|------|---------------|-----------|----------------|
| | | | |

Tell something to prove. Prove that the Dutch people are well educated; that they use their wits; that they are industrious; that they are thrifty; that they farm intensively; that they need logs on which to build walls.

A gift for little sisters and brothers. Make windmills out of oatmeal boxes; make barges with big red sails out of cardboard boxes; cut and color black-and-white cows; make flowering bulbs of crêpe paper. Set up a Dutch sand table and let some other class use it.



Photos J. Russell Smith

Courtesy Danish State Railways

Figs. A, B, C. In Figure A a Danish school-teacher and his pupils have their pictures taken before the teacher took me to see a neighboring farm. In Figure B the workmen are putting a new thatch roof on a cottage. Figure C is a typical Danish countryside with its cottage, church, and duck pond.

DENMARK

Good eggs. A man ordered soft-boiled eggs in a Scotch restaurant. One egg was bad. The man complained to the proprietor. He examined the egg, found the number stamped on its empty shell, and reported the number to the British coöperative wholesale store from which he bought eggs. The manager of the British coöperative reported the facts to the Danish wholesale coöperative egg association. The number on the egg told which man had sent the egg to market. The coöperative reprimanded the man. If after this he should send a second bad egg, he would have to pay a fine, and for the third bad egg, he would be expelled from the egg association. After this, he would have to take a lower price for his eggs, because the Coöperative Egg Association sells good eggs only and it guarantees the eggs it sells. Thus little Denmark became the world's greatest exporter of eggs.

Denmark makes herself over. This story of the egg tells you about one of the

methods Denmark used in making herself over in fifty years from a country that was poor, to one that is so prosperous and comfortable that people come from all parts of the world to see how it is done.

Denmark is naturally a poor country. She has no coal, no iron, and almost no water power because the country is so level. The surface is just a sandy coastal plain which the glaciers long ago scraped and pushed around, leaving it a lot of low, rounded hills, sand dunes, bogs, and swamps, with some good clay land. Denmark is surrounded by cold water, which makes the climate cool, damp, foggy, and cloudy — a hard climate in which to ripen grain.

Until 1870 the people were chiefly farmers. They made a living by selling grain and meat. Then came cheap grain and meat from the American West, from Argentina, from Australia. The Danish farmers could no longer make a living selling meat or grain. They shifted to butter, eggs, and bacon. They planted their fields to beets,



Figs. A-B. In these pictures you are looking at two capitals: København, capital of Denmark; and Gothaab, capital of South Greenland. Greenland is a colony of Denmark. Why the difference? See the many bicycle riders on the streets of København.

oats, clover, barley, and other food crops for cows and pigs. These crops suited the damp climate; the new crops suited the farmer also — they gave him more income.

Coöperation. If every farmer gathers the eggs from his farm and sends them to the store and the storekeeper does not know who sent the eggs, there *will* be bad eggs sent by some careless farmer; then the purchaser cannot be sure of getting only good eggs. If every farmer makes butter in his own dairy, there will be a thousand kinds of butter, and the purchaser cannot be sure of the quality of the butter he buys. But the great Danish butter coöperative association puts its stamp on every tub of butter, just as the egg association puts its stamp on every egg.

Most of the farmers in Denmark belong to one or more coöperative associations. Some coöperative associations buy supplies; others breed sheep; others breed horses; others breed hogs, and still others breed cows.

The farm factory and foreign trade. The Danish farm has become almost like a small factory. It produces grass, hay, oats, and barley. The cows and the pigs eat these crops and also cottonseed meal, linseed meal, soy-bean meal, and bran from

other countries. The animals turn these home-grown and imported foodstuffs into the finest of dairy products and bacon.

Tubs of Danish butter go by shipload lots to Britain. Some butter is exported in tin cans to be used on Central American banana plantations, on East Indian rubber plantations, in miners' camps in distant mountains, and in explorers' tents in the far places.

When a British housewife orders a package of Danish bacon, she knows just what she is getting — a streak of fat and a streak of lean, and cured in a certain way. It is the product of one of the coöperative meat-packing plants that are owned by the Danish farmers.

Government aid and intensive farming. One of the sons of the King of Denmark is a farmer. The government has done many things to help farmers to be efficient. It has lent money to the coöperative societies; and none was ever lost. The money was used to build packing plants, to buy cows, to drain swamps and make new fields, and to plant forests on the sand dunes; for Denmark, like England, has few forests.

The Danish people want to remain a nation of small farmers; so you cannot buy your neighbor's land to make your own

farm a big farm. The Danes think it is better for every man to own land; therefore more than half of the many farms having more than 1.36 acres have less than 24.7 acres.

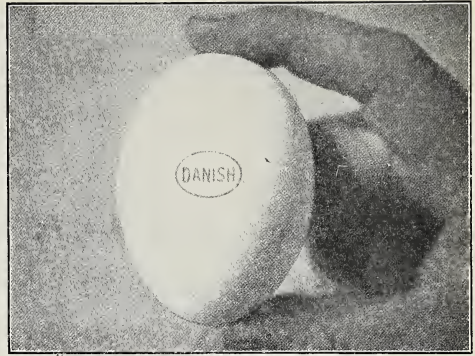
Manufacturing and trade. For raw materials, Denmark has clay. She makes fine china from one kind of clay and cement from another kind. She has no other raw materials except the crops from her farms.

There is no coal and almost no water power; so Denmark imports a little power from Sweden. It comes by electric transmission cable under the narrow strait that separates the two countries. The Danes must import most of the grain for their own bread, and grain for the cows; also coal, wood, iron, steel, and machinery, and the many products of the warm lands. Does that tell you why Denmark still has 56 per cent of her people living in the country?

Denmark is not like England and Germany and Belgium. She is not making her living by exporting manufactures. But if the British should stop buying her butter, eggs, and bacon, Denmark would be in the same trouble that the English cotton manufacturers were after Brazil and India built their own cotton mills.

Köbenhavn (Copenhagen), the one big city of Denmark, has a good location for trade. The lines of Danish ocean steamers go to every important European country. They go to North and South America, to Asia and Africa, and bring the produce of foreign lands. Many little coastal steamers carry goods to the one hundred inhabited Danish islands and to the ports of neighboring countries.

Colonies. You may remember from your study of North America that Denmark has a colony — Greenland. The King of Denmark is also King of Iceland, but he rules Iceland no more than the King of Great Britain rules Canada — indeed,



Courtesy Danish Railways

Fig. A. Read again page 155 and tell about this picture.

not so much, for he does not even send a governor to Iceland.

THINGS TO THINK ABOUT AND TO DO

Down, but not out. List natural conditions that make Denmark poor; include competition with other countries.

Copy and fill in the following blanks to show how she won out: Denmark planted to feed to her Her farms produce She buys to feed to cattle. She can get more money for than she can for Denmark has a reputation for selling products, because her associations will accept only the products from the.....

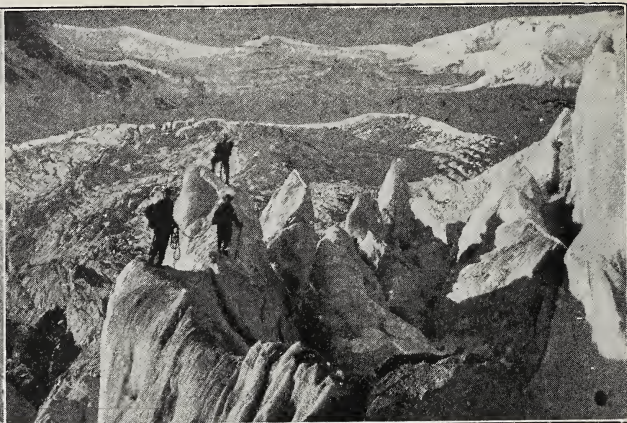
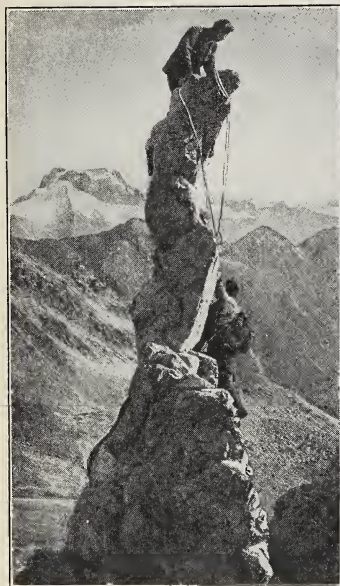
Draw a free-hand map of Denmark. Show her many islands; the straits that separate her from neighbors; locate Köbenhavn; write the names of exports and imports.

A Danish farm is like a factory. Copy and fill in the following chart to show this.

| RAW MATERIAL | USES OF THE MATERIAL | MACHINERY | FINISHED PRODUCT |
|--------------|----------------------|-----------|------------------|
| | | | |

"Waste not, want not." How do the following statements show that Danes save and do not waste?

1. They plant forests on sand dunes.
2. They use their poorer land for pastures.
3. They import feed for cows.
4. Their farms are small.
5. They import coal, wood, iron, machinery.
6. They plant oats, barley, and beets.
7. They belong to coöperative associations.
8. They drain swamps.
9. The farmers go to winter schools.



Courtesy Swiss Federal Railroads

Figs. A-B. Mountain climbing in Switzerland is thrilling sport. What do the ropes in the pictures tell you about the dangers of mountain climbing? What do the pictures tell you about much of Switzerland?

PART II. THE THREE COUNTRIES THAT ARE MOUNTAINOUS—SWITZERLAND, SWEDEN, AND NORWAY

SWITZERLAND

Playground and work ground. In the distance the snow-capped peaks were of a dull purple color, until the rays of the rising sun fell upon them and changed them to pink. I was watching a sunrise on the Alps. I stood on the edge of a precipice. A fall would have sent me to death hundreds of feet below. I was 7,000 feet above the level of the sea and about 4,000 feet above the valley that spread out below me like a map.

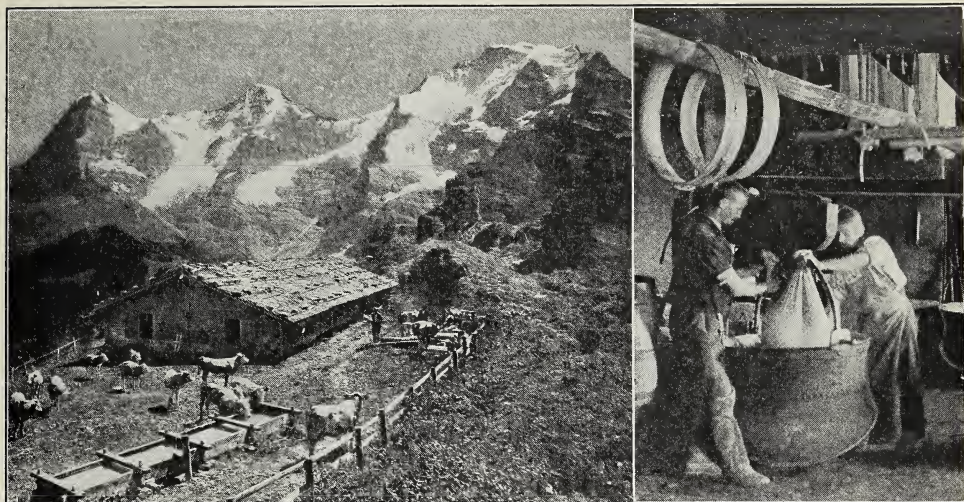
As I looked down from my precipice into the valley, I could see the hotel where I was staying. I could see back of it, on the other side of the valley, several paths made by people who climbed the mountains on the other side to see the fine view.

The valley farm and mountain hay field. I saw also mountains on every side. Straight below me was a shining stream, a large valley, and a smaller valley opening into it from the side. There was a farm village, with neat little fields around it;

the Swiss valleys are carefully and well cultivated. From where I stood, I could plainly see that most of the mountain sides were too steep to be plowed, but were dotted with little buildings that looked like houses, but were really hay sheds.

The grass on thousands of acres on the mountain sides is mowed each summer. Scythes are used for the mowing because the ground is much too steep to permit mowing machines. The hay is raked by hand; often it is carried on people's backs to the little barns, where it is kept sweet and dry for winter use. A winter job is to bring hay to the cows in the valley from the little hay barns scattered over the mountain sides. The hay is often carried down on hand sleds. In many places the land is not only too steep for a horse, but so steep that I could scarcely walk on the places where the Swiss actually cut hay!

Cheese from mountain pastures. As I sat on a precipice, looking at Switzerland,



Courtesy Swiss Federal Railroads

Figs. A-B. One of the high pastures about which you will read on this page. One of the famous Swiss Mountains, the *Jungfrau* (maiden), shows in the right background. In the smaller picture the men are making cheese.

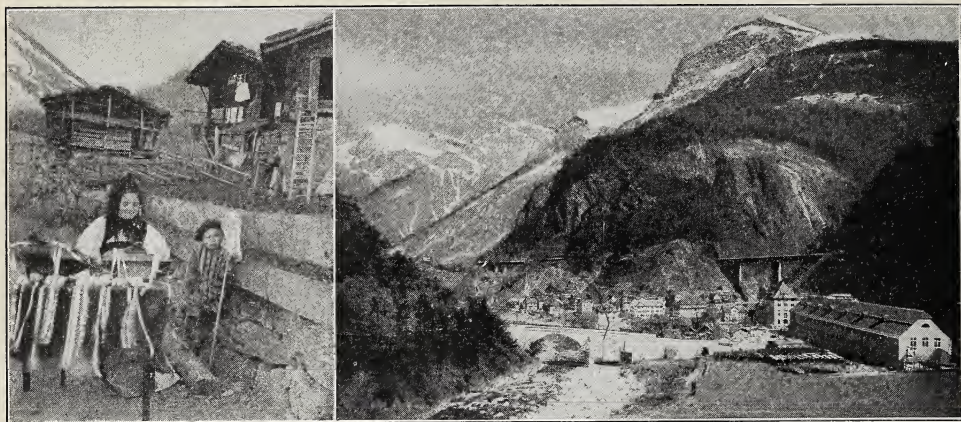
I heard the tinkling of bells — high-toned bells that sounded like the triangle instrument in a band; deep-toned bass bells that sounded almost like a drum. The herdsman in whose house I had slept was bringing the cows to the barn to be milked. Every cow had a bell strapped to her neck. The Swiss are very proud of their cows and love to put ornaments on them. The more nearly the bells on a herd sound like many musical instruments, the better pleased is the herdsman.

These cows were on what is called high pasture. They had spent the winter in the village in the valley. With the coming of summer, there was grass in the valley and on the lower slopes, and this the cows ate; they then moved to still higher land. As I came up the mountain, I had passed a place at 5,000 feet where the cows had stayed for a time; another at 6,000 feet where they had also stayed for a time, and now, early in August, they were at the highest station, more than 7,000 feet in elevation. Here they would pasture for a

time, and later, as they went down to spend the winter in the valley, they would again pasture a while at 6,000 feet and at 5,000 feet.

At the barn at seven o'clock in the morning I saw the milkers pouring the milk of many cows into a great brass kettle. By ten o'clock, the man who made cheese had curdled the milk and turned it to soft cheese. The Swiss eat more cheese than any other people. Cheese is also one of their important exports.

The forest aids the nation. From my high outlook, I noticed that some of the mountain sides were treeless pastures and hayfields, from the bottom to the bare rocks at the top; but here and there was a band of forest reaching from base to summit. The forest gives the Swiss farmer a winter job. In addition to their gardens, their near-by fields, the highland pastures above them, and the hayfields on the mountain side, the farmers have also strips of forest. When winter's snow covers the ground, the village farmers go to the



Courtesy Swiss Federal Railroads

Figs. A-B. These pictures show home and factory industries in Switzerland. The woman at the left is offering for sale lace which she made in her home. The town in the picture at the right is Amsteg. The large building is a water-power plant. See the St. Gothard railway carried on a viaduct.

woods to cut trees. Some of the mountain villagers do wood carving in winter. They make toys, salad spoons and forks, and many small objects and ornaments.

The factory in the valley. In the valley I saw the good road that passes the farm village and leads to a distant town, where I saw the smokestacks of a factory. With my spy glass I saw a line of towers supporting the wires that carry electric current from some power plant beside a mountain stream.

The Swiss are almost like the British in the way they support themselves by manufacturing. Yet their country has no seaport. The trade of Switzerland passes through other countries. Most of her manufacturing depends upon the skill of her people, and the people are trained to do fine work. They lead the world in the export of watches.

The Swiss export fine machinery and instruments of great accuracy. They also export embroidery, fine silk goods, fine cotton goods and laces, all of which are made of imported silk and imported cotton, and are the results of skilled and careful work. This means the Swiss

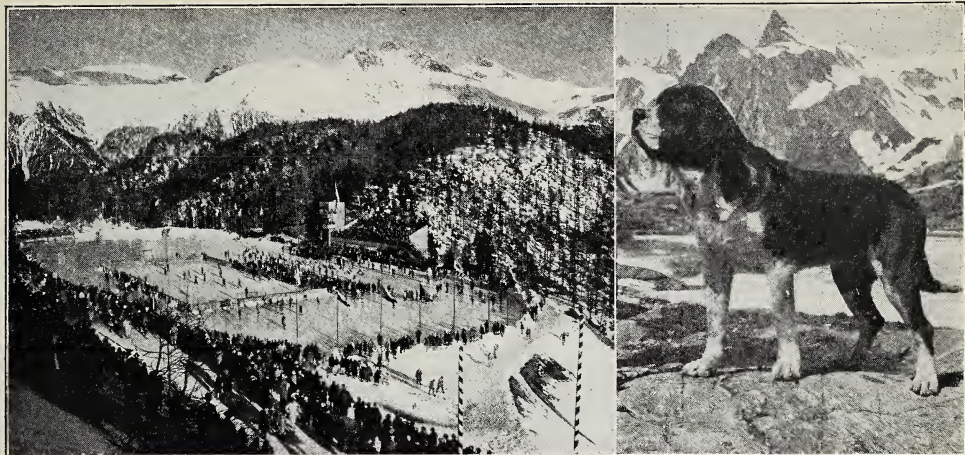
manufacturer can pay good wages.

White coal. Switzerland has no coal mines. Instead, she has upon her mountain tops several hundred square miles of snow fields and glaciers, where snow falls each winter and melts each spring and summer. Streams of snow water come dashing down from the high mountains. No other country has so much water power per square mile, and no other people make such general use of electricity. In some parts of Switzerland, nineteen houses out of twenty have electric lights. Two thirds of the government-owned railroad trains are run by electricity. Almost every village has electric power, and therefore small factories are built in many little towns where people wish to live and work.

The three parts of Switzerland. Switzerland is not all Alps. Nature divided the country into three main parts.

1. The Jura Mountains at the northwest cover about one sixth of the area. They are forested, full of woodcutters, dairymen, and watchmakers.

2. The Alps in the south cover more than half of the country, and have the cheese, wood, and tourist industries.



Figs. A-B. In Switzerland are ice stadiums for winter sports. The stadium in the picture is at St. Moritz. At the right is one of the famous St. Bernard dogs which are trained to help travelers in the Swiss Mountains.

Courtesy Swiss Federal Railroads

3. Between these two mountains, the central plateau, a fifth of the country, is really a wide, open valley. This plateau, which is almost exactly like the upland of southern Germany, is a rich land of farms and orchards. Here live two thirds of the Swiss people. Here are the cities, Zürich, Bern, Genève (Geneva), and Lausanne, all busy with factories and hotels.

Switzerland trades chiefly with Germany and France, but much Swiss export trade goes down the Rhine Valley to the sea at Anvers and Rotterdam. The city of Basel, a great railroad center at the head of navigation on the Rhine, is the chief gateway for Swiss exports and imports.

Three languages, two religions, one nation. Switzerland, although but twice the size of New Jersey, has twenty-two cantons, or states. Seventy-one per cent of the Swiss speak German, twenty-one per cent speak French, and more than six per cent speak Italian. Part of the population is Protestant and part is Catholic, but the people are all Swiss—a patriotic, well-educated nation.

International center. Eighty-eight international organizations have headquarters in Switzerland, of which forty-seven are in Genève. Genève is the seat of the Red Cross, the League of Nations, and the International Labor Office.

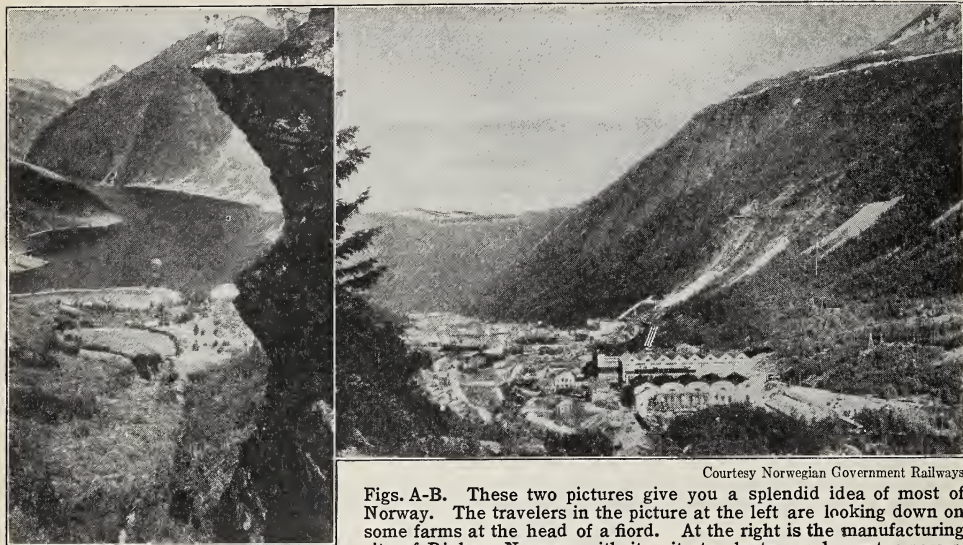
THINGS TO THINK ABOUT AND TO DO

Draw and color. Draw a large free-hand map of Switzerland. Show the three parts of the country; show the cities of Zürich, Bern, Basel, Genève, Lausanne. Show a part of the route to the sea along the Rhine, the Rhone, the Danube.

Have you read Heidi by Johanna Spyri? Read Chapter 3 aloud to the class.

Giving reasons for ways of the Swiss. Write reasons for two, but find reasons for all.

1. They harvest hay with scythes.
2. They haul hay in sleds, or carry it.
3. They lead cows to the valley in winter.
4. Their trade is an example of international coöperation.
5. They eat and export much cheese.
6. They change jobs in the winter.
7. They receive good wages in factories.
8. They use much electricity.
9. Most of them live on the plateau.
10. They get along well with their neighbors.



Courtesy Norwegian Government Railways

Figs. A-B. These two pictures give you a splendid idea of most of Norway. The travelers in the picture at the left are looking down on some farms at the head of a fiord. At the right is the manufacturing city of Rjukan, Norway, with its nitrate plants run by water power.

THE SCANDINAVIAN PENINSULA AND ITS FARMS

A stony, forested peninsula. The north-western corner of Europe is a great, stony peninsula, a thousand miles long and 250 to 500 miles wide. Suppose we cross it in an airplane in latitude 62° or 63° N. As we fly in from the Atlantic, the first thing we see is the top of a mountain. As we reach the land, we see many rocky islands, cliffs, and high headlands, and between them a deep channel of quiet water running back into the land. These deep bays that indent the coast are called *fiords*.

We follow the fiord for a hundred miles. The mountains rise steeply from its shore. In many places there is not enough room for a house or a road beside the water. We see a foaming waterfall dashing down the cliff. Here and there are bits of forest and a few little farms nestled among the stones. We pass the head of the fiord and fly over forests which cover the mountain sides up to about 2,500 feet. After leaving the forest, we look down on miles of green

moss, lakes, and running streams. The rough ice of a glacier fills a valley, and beyond the glacier is the shining white snow field. One snow field covers more than 400 square miles. Imagine a whole county in the United States covered with a snow field, and you will get an idea of this land. As we pass over the snow field, we are crossing the top of the Kjölén Mountains, which form the backbone of the Scandinavian Peninsula. Then come more miles of rock and moss, and we again reach the forest—the wide Swedish forest of evergreen trees. For miles and miles we fly over forests, lakes, and big rocks, until at last we see in the distance the Gulf of Bothnia. Near its shore are a few farms; at the mouth of the river is a village; in the village is a big building with a smokestack. It is a sawmill, and most of the people who live near work in the mill or in the woods cutting logs.

Northland farms. How do people make a living in such a land? They farm all that possibly can be farmed, but most of



Courtesy Norwegian Government Railways

Figs. A-B. You might call these pictures "North and South in Norway." The picture at the left shows a steamer rounding North Cape (Fig. 93-A). At the right is a farm in southern Norway where there is some fairly level land.

the land is too high, too cold, too steep, or too stony for agriculture. Fifty per cent of the entire peninsula is waste; forty per cent is forest; only ten per cent is in fields and pastures. Poor Norway has only one acre in forty that can be used for a field, and Sweden has about one acre in eleven. Little Denmark has more than half as much farmland as is found in the whole of Norway and Sweden.

The long summer helps the Scandinavian farmer. In northern Sweden, where the June and July sun shines nearly all the time, a certain kind of barley will ripen in sixty days.

The Norwegians and the Swedes manage to produce the potatoes they need. Their cold climate suits rye and oats better than other grains, and rye bread is a standard food. Some breadstuffs, and part of the grain food for the cattle, must be imported. Pasture, hay, and oats are the chief crops of Norwegian and Swedish farms. Norway has three times as much land in hay as in all other crops combined. Southern Sweden, across the sound from Denmark, follows Danish agricultural methods, and has an export of butter. This is one of

the few agricultural exports from the peninsula.

There are Norwegian farms on which the farmer goes to his field by climbing a ladder up the side of a mountain. He cuts hay by hand, and sends it down on a little trolley that runs on a wire. In this damp and cloudy climate, the farmers often have to dry hay on a fence or on poles or even inside a building. It is no wonder that thousands of Norwegians and Swedes have emigrated to the United States and Canada, where there is so much cheap land.

THINGS TO THINK ABOUT AND TO DO

Pictures in your mind. In flying over the Scandinavian Peninsula, we saw many pictures. Write a list of these pictures as they come to your mind. Then put them in proper order. Compare lists with your classmates.

Draw a free-hand map. Draw a map of the Scandinavian Peninsula and fill it in as you study about Scandinavia.

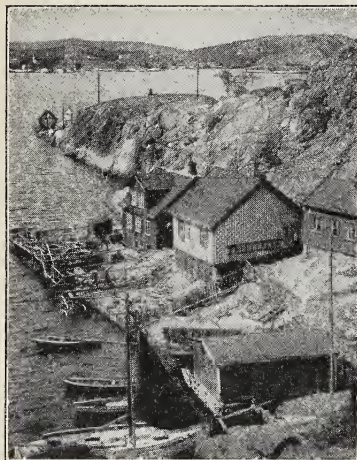
Circles and lines may tell a great deal.

1. Draw a two-inch circle. Show by different colors, the area of waste land, forests, fields, and pastures in Scandinavia.

Show the same things on straight lines.

2. On lines, show $\frac{1}{10}$ of Norway's area in farms; $\frac{1}{11}$ of Sweden's area in farms.

3. On a two-inch circle, show a six-hour day in Oslo, and a one-hour day at Narvik.



Courtesy Norwegian Government Railways

Figs. A-B. Many Norwegian fishermen live in houses close to the sea, as you see in the picture at the left. They go out in their boats and fish for cod near the Lofoten Islands. The islands show in the background of the picture above.

THE OTHER INDUSTRIES OF NORWAY AND SWEDEN

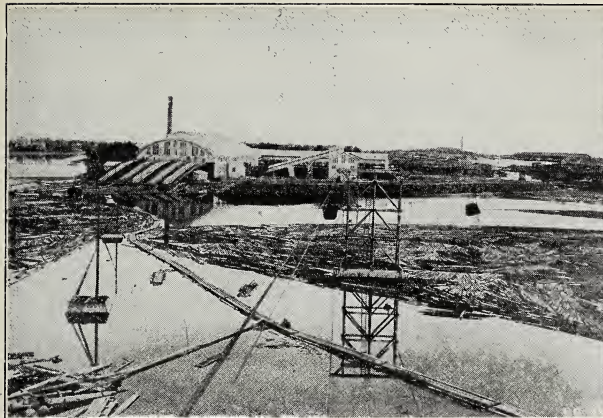
Norwegian fish. Fish are the chief export of Norway. Luckily the Norwegians, who have so few chances for jobs at home, live beside seas which are rich in fish. The fiords make safe harbors. The fishermen can go out to fish any month in the year, because the warm winter (page 94) keeps the sea and bays from freezing, but the most important fishing seasons are winter and spring. This gives many farmers a winter job. Each year about 10,000 boats catch cod on the famous fishing banks near the Lofoten Islands, off the Norwegian coast.

Antarctic whales. The Norwegians also catch whales, no matter how far they must go to find them. At the present time, most of the Norwegian whalers are working in the Antarctic Ocean. They go in fleets of three or four boats. Two or three "chasers" catch whales and bring them to the "rendering" ship, which is really a floating factory where the whales are cut up and cooked, and all the useful parts are saved. Other boats carry the cargo to market. An oil ship may come back to

port with 40,000 barrels of whale oil, useful for soap and fuel.

Norwegian ships. The Northmen whose ancestors were Viking pirates a thousand years ago, now carry bread and bananas for anyone who wants a job of sea hauling done. The Norwegians have nearly three times as many tons of shipping per person as have the British. The entire population of the country could go into their ships and sail away; one man in ten is working on the fleet. They have no use for many of these ships except that of carrying freight for other peoples. Sailor's wages and ship hire are two of the important ways by which the Norwegian gets money. With it he can buy the many things he must bring back to a country that can produce only a part of his food, and a few other important commodities.

Land of forests and sawmills. There is plenty of rain to make forests grow in all parts of Scandinavia where it is not too cold. About twenty-four per cent of Norway and more than half of Sweden are in forest. Seven hundred years ago the Norwegians floated logs down the streams into the fiords, made lumber, loaded it



Courtesy Norwegian Government Railways

Figs. A-B. These pictures suggest two great industries in Norway and Sweden—lumbering and hydroelectric power. How did the logs get to the storage pond and what will become of them in the sawmill? How might the waterfall be used? See the man at the bottom of the picture.



into their ships, and sailed away to England. They are still doing that.

Wood pulp and paper are first among Sweden's exports; lumber is third. The trade in paper is increasing; and Sweden is now making rayon from wood pulp.

Plenty of water power. Scandinavia has no oil and very little coal, but it has one quarter of all the water power of Europe. The west winds from the Atlantic bring much rain and snow; in some parts there are over 110 inches per year. This moisture falls upon the high plateau where Nature does much to store it until it is wanted, and thus give the streams an even flow. Moisture is stored in snow fields, in glaciers, in spongy moss lands above the tree line, and in thousands of small lakes.

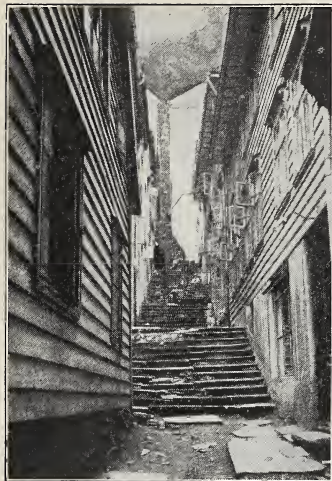
No other country makes so much electric power per person as Norway. In Scandinavia the use of coal is actually declining. Where there is so much power, it is natural that they should have industries that use much power and little raw material, or raw material from near at hand. Norway is an exporter of nitrates (page 127) and cement. In aluminum, smelted in electric

furnaces, she is exceeded only by the United States and Germany. Sweden uses large amounts of power for lighting and heating; for grinding up millions of logs into pulp for paper; and for smelting iron ore.

Swedish iron. I know a skilful American blacksmith who tells me that he uses Swedish iron for his best work. Sheffield (page 109) made its reputation for fine cutlery by using Swedish iron, melted with charcoal from the forests of central Sweden.

Sweden has great deposits of iron ore near the head of the Gulf of Bothnia. It is rich ore. By using rich ore, you pay less freight in carrying a ton of iron and you use less coal in smelting a ton of iron. Sweden exports nearly all of the 10,000,000 or 11,000,000 tons of iron ore that she digs each year. Most of it goes to Rotterdam, and thence to the Ruhr (page 128).

Fine manufacturing. For a long time Sweden, with all her farms full, had no jobs for her increasing population. Many people emigrated. Sweden is now building up manufacture. For years Sweden exported part of the iron which she smelted from her ore, but she now keeps more of her



Figs. A-B. Many streets in Norway and Sweden are like the street at the left—so steep that steps are needed. Above is a part of Hammerfest, the northernmost town in the world.

iron at home, and uses it herself for making many articles of iron and steel.

Cities. Far inside the Arctic Circle is the northernmost city in the world, Hammerfest, Norway. The Midnight Sun shines on its 3,000 people in summer as do the Northern Lights in winter. Fishing, whaling, seal-hunting and tourists are its industries.

Oslo (Christiania) is the capital of Norway. This modern city has an excellent harbor. It is Norway's leading seaport.

Second only to Oslo in size and importance, in Norway, is the city of Bergen. Like Oslo, Bergen has a fine harbor. It is the center of the fish industry.

In Sweden, Stockholm, the capital is one of the most beautiful cities of Europe. Because of the number of islands within its city limits, Stockholm is sometimes called "The Venice of the North." Stockholm, on the eastern coast, is connected with Göteborg, on the western coast, by a series of lakes, canals and rivers. Göteborg lies on the North Sea (Fig. 92-A) which gives it a natural shipping advantage. It is, therefore, an important railroad center.

THINGS TO THINK ABOUT AND TO DO

Earning a living. Make a list of your jobs if you were a Scandinavian and lived: 1, on a farm; 2, on a fiord; 3, at the mouth of a mountain stream; 4, in a city.

Scandinavian words and expressions. Use in sentences: chasers, rendering, Viking pirates, pulp wood, rayon, charcoal, power is stored, fishing banks, floating factory.

Sea captain. If you were a Scandinavian sea captain, list the cargoes that your ship might carry.

Finding reasons. Write the reasons for the following:

1. Norway cannot raise enough food for herself.
2. Scandinavians can fish, even in winter.
3. Their ships carry freight for other nations.
4. Lumbering is easily carried on.
5. Sheffield factories use Swedish iron.
6. Some industries of Scandinavia use much power and little raw material.

How many more good statements that need reasons can you make about Scandinavia?

Work for extra credit. In a reference book, read about whales; of the useful things that come from whales.

CHAPTER SUMMARY

Write several short statements that tell the most important things that you remember about each of the five thrifty small nations.




Courtesy Austrian Tourist Information Office

Figs. A-B. Country and city in Austria. The Austrian girls at the left are in native costume. Above is a part of the beautiful city of Wien (Vienna). Nearly all the buildings which you see in the picture housed government offices at the time when Wien was the capital of a great nation.

AUSTRIA AND CZECHOSLOVAKIA

AUSTRIA

 Let the class become a chamber of commerce for Austria. When you have finished this chapter, tell what things Austria should do to improve her conditions.

Wien (pronounced vĕn) (Vienna) — a capital. We may call Wien a grand lady, all dressed up but with no place to go. In 1914 this city was one of the great cities of Europe, the capital of the Austro-Hungarian Monarchy, with its 51,000,000 people.

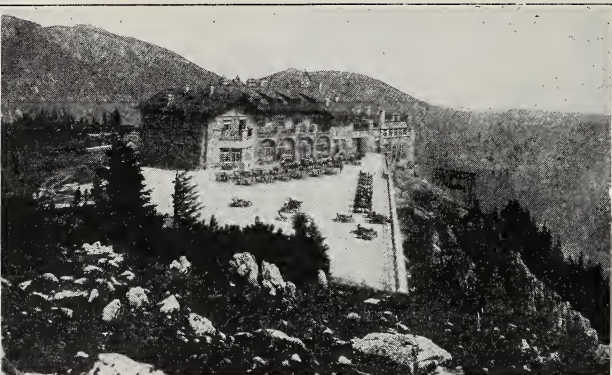
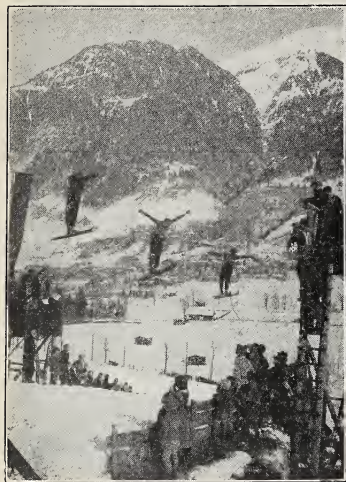
You remember that many people live in Paris because France has a centralized government. This happened at Wien also.

Wien — a trade center. Wien was also a great center of banking and trade. She grew great because she stood at one of Nature's crossroads. Look at the map (Fig. 116-A) and note that the Alps and the Carpathians almost meet near Wien. From this point natural gateways open for canals and railways. From Wien, railroads go northward along a branch of the Danube and cross the low divide into Upper Silesia and the Oder Valley, through

what is called the *Moravian Corridor* (page 170). They also go northwestward through Praha and Berlin to the Baltic and North Sea ports; to the west, trade goes by train to München (Munich) and on to the Rhine, or over to Italy by way of the Brenner Pass above Innsbruck, or by boat up the Danube, thence by canal to the Main, a branch of the Rhine. Trade passes to the eastward down the Danube to the Black Sea; or southwestward, over the mountains to the ports of the Adriatic.

With the map of Europe before you, have someone read aloud this section about Wien as a trade center. Let everyone follow on the map the trade routes described.

The break-up of the old monarchy. Some people called the Austro-Hungarian Monarchy the *Polyglot Empire*. The word *polyglot* means "using several languages." Eleven languages were allowed in the parliament at Wien. The Czechs, Slovaks, Ruthenians, and Poles lived in the northern part of Austria-Hungary; the Germans (Austrians), Hungarians, and Rumanians were in the center; while in the south were the Southern Slavs (Serbs, Croats, and



Courtesy Austrian Tourist Information Office

Figs. A-B. Winter and summer in the beautiful mountains of Austria. Tourists visit Austria in winter for skiing and other winter sports. In summer they may visit the hotel which you see in the picture above.

Slovenes). At the close of the World War, this empire was divided. How many states got a part (Figs. 116-A and 117-A)?

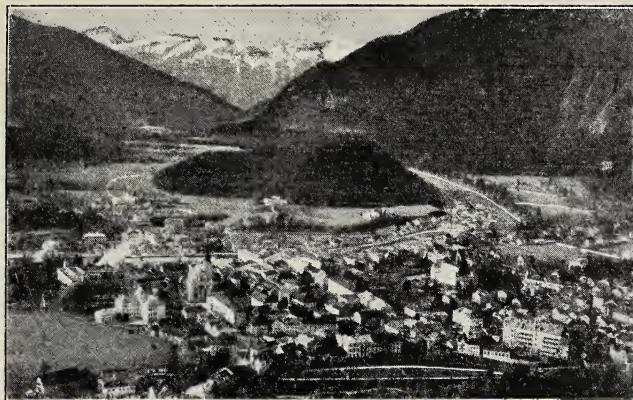
Wien is now the capital of Austria only, a poor little mountainous country about the size of the State of Maine, with a population of 6,700,000. This is a tragic change for a city that was once the capital of a great empire.

Austrian commercial equipment. Before the World War, the cities of the present Austria had grown rapidly. New factories were being built; Austria was becoming a manufacturing region, with a large home market that included the whole empire. Her merchants and manufacturers could buy and sell freely in this home market. They bought sugar and coal from Bohemia (western Czechoslovakia); wheat and coal from Hungary; cattle and hogs from Serbia (Yugoslavia).

Under the new conditions, there is a tariff at every boundary. Goods may not pass until the manufacturers have paid to other nations the amount of tariff that has been imposed. The Hungarians not far away built their own cotton mills. Therefore cotton mills stood idle in Austria.

In the days of the Austro-Hungarian Empire, Austria did spinning, Bohemia (now part of Czechoslovakia) wove the yarn into cloth, which was sent back to Austria for finishing, and was sold in Poland or Rumania. Now tariffs separate these mills. But Austria must live by selling things abroad, and is succeeding in selling about forty per cent of her manufactures, chiefly wood products, textiles, and iron and steel goods of high quality.

The assets of Austria. Austria is about twice as large as Switzerland, and her percentage of arable land (twenty-three per cent) is twice that of Switzerland. Many of the Swiss mountains extend into Austria, but the small lowland around Wien, called *Lower Austria*, has a rich soil called *loess*. It was formed of particles carried by the wind. Since this part of Austria has a very good climate, it is one of the finest regions in Europe for farming. The Austrian farmers grow chiefly rye, oats, wheat, barley, potatoes, and hay. There is enough rainfall for forests, which cover nearly two fifths of the area. Only Sweden and Finland have a larger percentage of their land in



Courtesy Austrian Tourist Information Office

Figs. A-B. The Austrian Tyrol has many beautiful mountain towns and cities like the two in the picture. Above is the city of Bad Ischl. At the right is the village of Finkenberg.



forest, and, like these countries, Austria has lumber, pulp, and paper as exports.

Like Switzerland, she has much water power. She has some excellent iron ore, but, having no coal that will make coke, she imports coal from her neighbors.

Austria's problem. With her big city population, Austria must import food, raw materials, and fuel. Can she continue to be a state? Fortunately she has undeveloped resources and fine scenery.

The Swiss have developed more than sixty per cent of their water power; the Austrians but thirty per cent of theirs. The Swiss cow gives over 6,500 pounds of milk a year, and the Austrian cow 2,500 pounds less. This is because the Swiss have been breeding cattle carefully and have given thoughtful attention to the problem of developing their country.

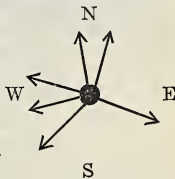
The Austrian farms are most inconveniently chopped up into rather small strips. The government is trying hard to consolidate the farms, and is succeeding but poorly with this most sensible reform. Unfortunately, the Austrian farmer continues to use things as his father did.

If the people of Central Europe can over-

come the unfriendly feeling toward one another and can stop making tariff walls, each can produce things that the others need, and all can make a better living than is now possible. If the nations cooperate to do this, Wien must again grow as a center of trade and finance, because she still has her splendid location, her lovely parks and public squares, and her magnificent public buildings.

THINGS TO THINK ABOUT AND TO DO

A spider web of traffic. 1. Copy and enlarge this figure in your notebooks. The dot stands for Wien; the arrows stand for travel routes. Along the arrows, write the rivers or passes that the routes follow; at the heads of the arrows, write the cities and seas that end the routes.



2. I want to travel from Wien to Berlin (or Italy, Istanbul, the Adriatic, München, the North Sea, Bohemia, Schlesien). How shall I go? Look at your "spider web" or at the map (page 116) as you write your answers.

Before and after. 1. Make a map of the old Austria-Hungary and the new Austria.

2. Put on the map all the important things, places, and languages.

3. Make a 4-minute talk about "before and after."



Fig. A. Ring-around-a-rosy in Czechoslovakia. The players are dressed in the native costume of Moravia.



Fig. B. A wedding procession in Czechoslovakia. There were many more people in this procession but we cut the picture so that you could see the bride's dress more clearly.

CZECHOSLOVAKIA

☞ When you finish reading about this country, prove or disprove this statement: It requires much careful thought for Czechoslovakia to keep her people prosperous.

A new country. Czechoslovakia is a new country, formed after the World War (Fig. 116-A). Look closely at the map (Fig. 117-A). Notice the elevations of the land, the locations of Wien and Budapest, and

their railroads, and see whether you can tell why no railroad passed from east to west through Czechoslovakia.

Western Czechoslovakia was once the old Kingdom of Bohemia; in the east was the old Kingdom of Slovakia; between the two is Moravia. An important thing about Moravia is the "Moravian Corridor," as the low pass through the highlands of Central Europe is called. It is the lowest pass to be found between the River Rhone and the lowland north of the Black Sea.

Slovakia reminds us of eastern Europe. It has a sparse population. Many of its people cannot read. The peasants in their farm villages wear clothes made in local styles that have not changed for hundreds of years. The roads are poor. There are few railroads, few manufactures, few cities — and those are merely big villages.

The Carpathian Mountains reach up above the timber line, and have many summer pastures, where flocks of sheep, herds of cows, and herdsmen go as they do on the Alps. Lower down are great forests, and many valleys reaching back into the mountains have farm villages that are cut off from their neighbors by high, wooded ridges that reach out from the mountains.

Bohemia is a part of western Europe and is modern in every way. It has a dense population, good roads, many railroads, and many cities. The people who live in the country wear clothes of modern style, as do those in the city, and nearly everyone can read.

Bohemia is ringed around with forested mountains. Mountain streams turn water wheels that run sawmills and paper mills. The plateau of Bohemia, with Praha near its center, has good soil, is intensively cultivated, and the crops are scientifically fertilized. Wheat and potatoes are the chief food of the people, and sugar beets are the most important crop. Indeed,

Czechoslovakia is one of the greatest sugar exporters of Europe.

Bohemia also has coal, iron, and manufactures. For a thousand years the Bohemians have manufactured glass of rare quality. Before the World War, they did about eighty per cent of the manufacturing in the large Austro-Hungarian Empire (Fig. 117-A). Because most of that empire was farmland, Bohemia had there a good market for manufactured goods. The new boundaries that were created after the war changed most of her markets into foreign lands.

Studying foreign markets. Czechoslovakia now needs foreign markets almost as much as England does, and she has succeeded well in getting them. For example, in 1930 she exported ninety-five per cent of her glass jewelry, eighty-five per cent of her chinaware, eighty-nine per cent of her earthenware, and seventy-nine per cent of her sheet glass. Czechoslovakia has worked hard to get and keep foreign markets. She finds that the people in certain parts of India like amber-colored beads; so the Bohemians make them. If you want glass balls for the Christmas tree, the Czechoslavs will be only too glad to make them as you wish — white or green, blue or red, large, small, or middle sized. People in other countries often call the Czechoslavs the *Yankees of Europe*.

Before the World War, Bohemia made two thirds or more of the shoes for the people of the Austro-Hungarian Empire, and had, besides, a big export trade in shoes to Russia, Rumania, and Bulgaria. Since the World War, a Czech, whose name was Tomas Bat'a, came to the United States, studied American methods, went back home, and built a huge factory that made shoes on the system that is used in making low-priced automobiles in America.

Praha, Plzeň, and Brno are the chief



Fig. A. Some of the beautiful pottery made in Czechoslovakia.



Fig. B. This shepherd is pasturing his flock on the lower lands of the Moravian Corridor.

manufacturing cities of Bohemia. Plzeň is famous for its beer, and Brno for cloth and machinery.

The Czechs are proud that a factory in Praha built the machinery for a power plant to be erected in the city of London.

International agreements for trade. The new government has made many commercial treaties with other countries. One provides that Czechoslovakia shall trade Bohemian coal for German potash to be used in fertilizing her fields and as a raw material in many factories.

Czechoslovakia has two of the eleven members who make up the international commission that takes charge of the traffic on the Elbe, and its branch, the Moldau,

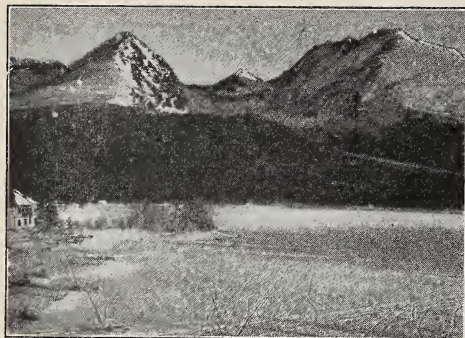


Fig. A. The Carpathian Mountains in winter.



Fig. B. An old castle in the mountains of Bohemia.

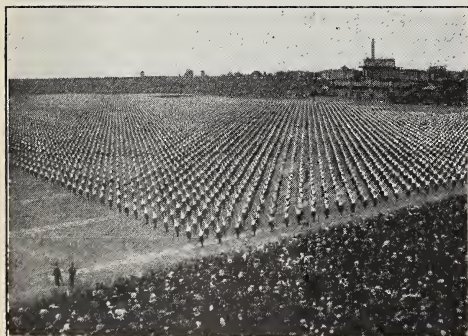


Fig. C. Each white dot, row by row, in this picture is a Czechoslovakian boy or girl taking part in a gymnastic drill.

on which Praha stands. This river now has many dams, canals, and locks to make it ready for the boats which carry yearly two million tons of Czechoslovak freight.

She has membership in the international commission which takes charge of the

Danube traffic, for which Bratislava is the chief Czechoslovak port.

Imports and exports. The country is a little larger than New York State, and has about as many people to the square mile. Therefore it has to buy both bread and meat, and these the farmers of the neighboring countries are glad to furnish. She exports sugar, cottons, woolens, iron and steel, glass, and many other manufactures.

THINGS TO THINK ABOUT AND TO DO

Reaching the sea. Draw a free-hand map of Czechoslovakia, using a scale to get the right length and width. Draw the Elbe and the Danube to the sea. Show the cities of Praha, Brno, and Plzeň; the five ports to which their freight may go. Color brightly the lines of trade from Czechoslovakia to the sea.

Facts. Use your text, maps, and APPENDIX, and write one fact about Czechoslovakia suggested by each of the following:

- | | |
|---------------|---------------|
| 1. Size | 6. Cities |
| 2. Slope | 7. Rivers |
| 3. Population | 8. Industries |
| 4. Location | 9. Products |
| 5. Surface | 10. Exports |

Important topics to talk about. Czechoslovakia before the World War; glass; iron; machinery; foreign markets; mountain shepherds; enclosed valleys; many peoples; international agreement; international commission.

For extra credit. Find something about the small countries of Europe and the League of Nations.

CHAPTER SUMMARY

Alphabet challenge. Divide the class into two teams. Team 1 writes the alphabet on the board, and beside each letter writes the name of some place or thing connected in their minds with Austria or Czechoslovakia: as, Austria, beads, Czechs, etc. They challenge the opposite team to tell some facts remembered about each name.

Contrasts. Let some of the class tell:

1. About Czechoslovakia before the World War; after the war.
2. About the eastern part of Czechoslovakia; the western part.
3. About getting along with neighbors in Great Britain; in Central Europe.

YUGOSLAVIA, ALBANIA, AND BULGARIA

☞ When you have finished this chapter, answer this question: What differences result from living in a Balkan mountain valley and in the valley near the Danube?

THE MAP AND THE THREE REGIONS

Three regions. What does the map (Fig. 116-A) tell you about the surface of Yugoslavia? of Albania? of Bulgaria? The land of these countries is divided by Nature into these three regions:

1. **The Dalmatian coast.** The east shore of the Adriatic is called the *Dalmatian coast*. It has many harbors, beautiful little towns centuries old, and little patches of soil in sheltered nooks at the foot of the steep mountains. Having the Mediterranean climate, the Dalmatian coast produces grapes, olives, and figs, but there is little of this excellent land for farming. The Dalmatian coast is much like the Riviera (page 72).

2. **The Danube Valley.** Fortunately, Bulgaria and Yugoslavia have some of the rich, almost level land of the Danube Valley. This valley, which is very different from the Dalmatian coast, is an extension of the Hungarian and Rumanian plains (page 182). It has cold winters and warm summers, and enough rain to make corn grow well. This is one of the world's good regions. Its level land is easy for building railroads, and it has the advantage of being near to the steamboats that run up and down the Danube. Here I have admired many comfortable farm villages shaded by fine walnut trees. Sometimes tractors plow the land here, and reapers are used. This part of both Yugoslavia and Bulgaria is a densely peopled land; its farmers are engaged chiefly in growing corn and wheat, both of which are exported. Many prunes are also exported to Bordeaux, France, where they are repacked and sold as French prunes.



Fig. A. A Slovenian peasant woman dressed in the native costume of her country.

The Danube Valley is the seat of most of the foreign trade of Yugoslavia and Bulgaria, but most of the area of these two countries is mountainous.

3. **The land of mountains.** The third region is the wide land of mountains that covers the larger part of these countries.

THINGS TO THINK ABOUT AND TO DO

Draw or trace a map of the Balkan Peninsula. 1. Show the Adriatic Sea, the Aegean, the Black, and the straits between; the countries of Yugoslavia, Bulgaria, Albania, Greece, and Turkey, by drawing their boundaries.

2. Color the Dinaric Alps and the Findus and Balkan mountains.

3. Color the coastal lowlands and the Danube and the Morava-Vardar valleys.

4. Locate Istanbul, Beograd (Belgrade), Thessalonikē, Skoplje (Usküb), Sofiya.

5. Draw a red line to show part of the route from Paris to Istanbul; draw a blue line for a boat trip from Odessa to Beograd.

6. Sketch a much smaller map of Yugoslavia, Bulgaria, and Albania, and show the three natural regions. Figure 6-A will help you with the regions.

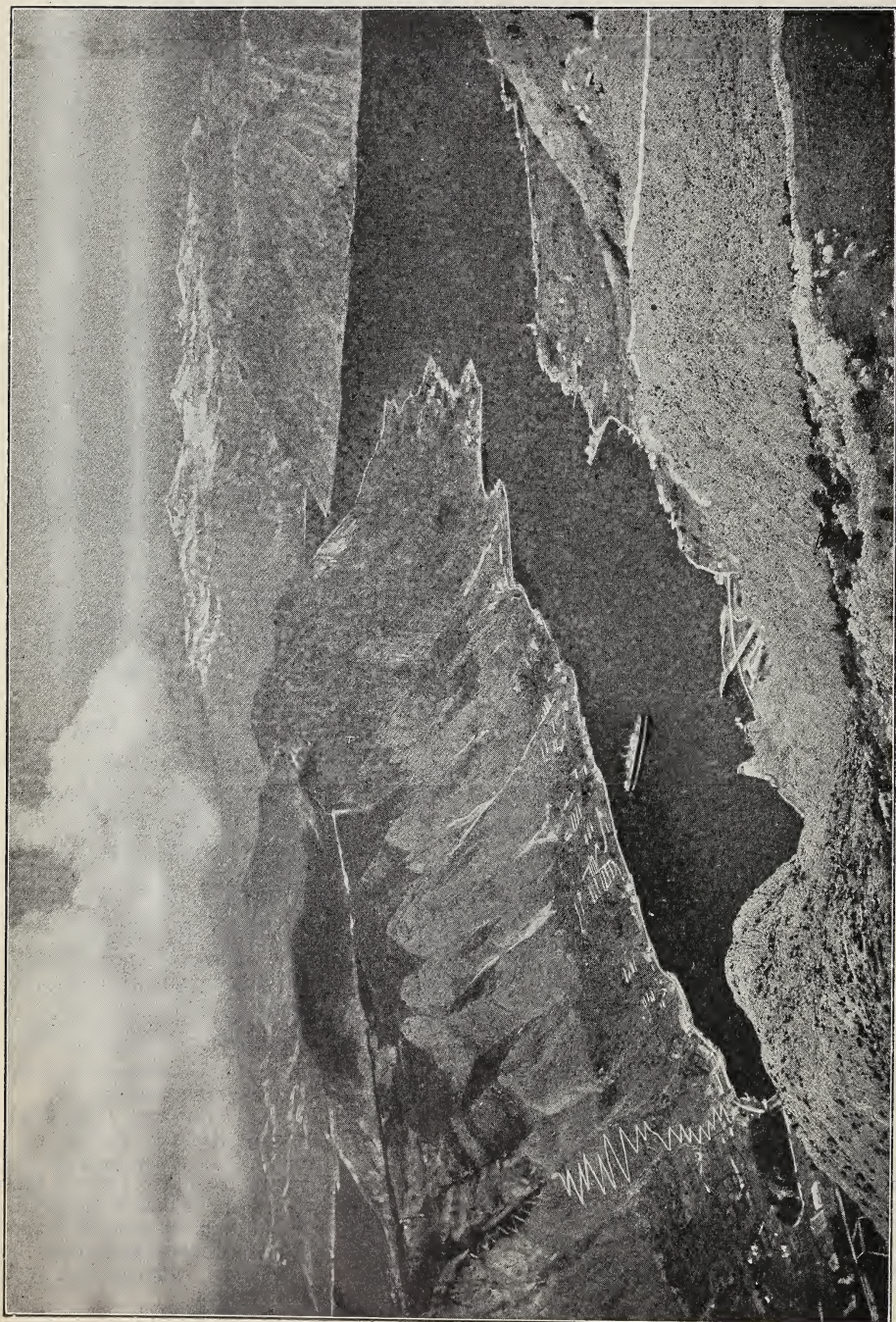


Fig. A. This picture gives you a better idea of much of the land in Yugoslavia, Albania, and Bulgaria than you can get in any other way. You must imagine that you are flying 4,000 feet above the sea and looking down on the Dalmatian Coast. The steamer is a large transatlantic liner. Near the

water's edge are villages, then come terraced fields, then bare rocks with some mountain forests. A road zigzags up the side of the mountain and runs along its crest. Off in the distance are more mountains with little fertile valleys in which people live, cut off from easy contact with the outside world.

LIFE IN THE MOUNTAINS

A mountain village. Michael Cenovitch is a Serbian boy. His home in a village in central Yugoslavia is a one-story stone house, with a dirt floor and a roof of straw. The village is beside a stream in a pretty little valley, with mountains surrounding it. A mile below the village, the stream flows into the side of a mountain, and there runs for miles through underground passages in the limestone rocks. This stream has cut no valley through the mountain. The valley where Michael lives has no outlet except over the hills. It takes three days on mule back to reach a railroad or a little town on the Adriatic Sea — three hard days of climbing up and down, up and down. Michael's father makes several trips each autumn. He loads the mule with two balanced bales of wool, tobacco, or salt pork, and, with a pack on his own back, he walks beside the mule. They bring home a supply of store goods to last the family the rest of the year.

The mountain farm. The Cenovitches own five acres of valley land. In their little farm is a cornfield, a garden, some fruit trees, two little patches of wheat and tobacco. Their chief food is corn bread, and cheese made of sheep's milk. There is an oak forest on a part of the mountain, and in the autumn Michael's brother watches their two pigs and those of several neighbors as the animals fatten themselves on the acorn crop that falls from the trees. Often Michael's mother goes out with the sheep that pasture on the hills. She spins wool yarn or knits socks as she watches the sheep. Sometimes she knits figures of several colors in the stockings. That is one of the ways of being well dressed in the Balkans. In winter, she weaves the yarn into cloth on her hand loom. There is but little cotton in the house; instead, they use linen made from home-grown flax.

When the family have guests, they serve tea with sugar, but they use only twenty pounds of sugar in a year. How much sugar does your family use? Can you tell why there is so little sugar and so little cotton in this part of Yugoslavia? What else do you think the family buys with the bit of money Michael's father gets when he sells their wool, tobacco, and pork?

The three countries, Yugoslavia, Albania, and Bulgaria, have hundreds of little valleys much like the valley in which Michael lives, and where the people make their living in much the same way.

This mountainous region is the most shut-in and isolated part of Europe. It resembles some of the most inaccessible parts of our own Appalachian Plateau.

The pocketed peoples. It is difficult for people to make a living in such a rough and isolated country, and they have been further handicapped by wars and unjust rulers. The Albanians seem to have been the original race. They were called *Illyrians* in ancient times. No one knows when they came, but their land is so rough and difficult for the traveler that it has never been thoroughly conquered. The Greeks took the Aegean shores four thousand years ago; then the Romans built towns along the Adriatic shore. Later came the South Slavs, who took the territory to the north of Albania; then came the Bulgars, who took the land to the east; and, finally, the Turks came across from Asia Minor, took possession of most of the Balkan region, and captured Istanbul (Constantinople) in 1453. But even the Turks never succeeded in ruling some of the Albanians, or their neighbors of the Black Mountains (Montenegro), just north of Albania.

The Turks in Europe. For nearly five hundred years the peoples of the Balkan countries were under the control of Turkey.

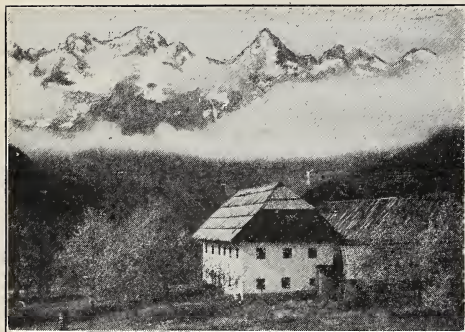


Fig. A. A peasant's home in Yugoslavia. The cloud has lowered part way into the valley, showing the snow-clad peaks above.

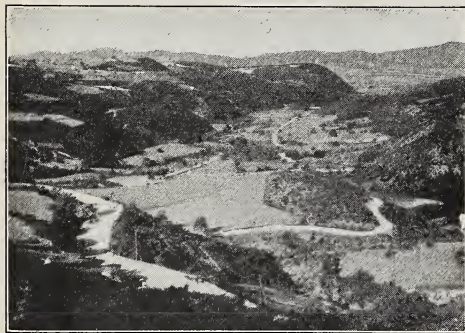


Fig. B. A sweet-scented valley in Bulgaria given over to the growing of roses for perfume.



Fig. C. These Slovenian girls are picking pyrethrums, a kind of daisy.

In the height of their power, the Turks had a large empire that extended from the Persian Gulf to the Danube River. This empire also included most of North Africa.

One by one, the peoples gained their independence. The Greeks in Athēnai (Athens) and the parts of Greece to the south of Athēnai became free early in the nineteenth century. By 1878, Bulgaria, Rumania, and Serbia (which is now a part of Yugoslavia) became almost, or quite, self-governing. But Turkey still ruled Istanbul (Constantinople) and a strip of territory extending from the Black Sea to the Adriatic. Turkish rule lasted long because of the jealousies of Britain, France, Russia, Italy, and Germany. The governments of these five big countries let the Sultan rule in the Balkans and live in Istanbul because all feared that his removal would upset the balance of power by letting some strong nation get this key point to southern Europe and Asia. Istanbul is a key point because it controls the straits giving entrance to the Black Sea, and it is a great crossroads for people and goods. Its mere location gives power.

The mixed peoples. Getting free from the Turks has not ended the troubles of these peoples, because it seems impossible for any Balkan country to become united enough to become one people. Perhaps in one village the people are Greeks; in the next village the people are Turks; in the next, Bulgars or Serbs or Albanians. At first the official name of Yugoslavia was "The Kingdom of the Serbs, Croats, and Slovenes," and not one of these peoples wants any of the others to rule it.

On the level prairies of Canada or the United States, it is easy for people to move about and thus get acquainted, to speak one language, and to understand one another. This is one reason why we can have in America a government that rules peaceably a territory larger than a dozen of the jealous and quarrelsome Balkan countries.

The Morava-Vardar Corridor. There is,

however, one open valley (corridor) extending the entire width of the region (Fig. 116-A). This open road is made by the valley of the Morava, a river that flows north to the Danube near Beograd (Belgrade), and near its source almost joins the valley of the Vardar River, which flows southward to the Aegean Sea near the port of Thessalonikē. The waters of these two streams are so near together that the Germans planned to join them by a canal when they were in possession of the country during the World War. The Yugoslavs hope to build this canal.

This Morava-Vardar Valley is one of the world's oldest thoroughfares. No one knows when bands of migrating people first began to use it. Four thousand years ago the Greeks passed this way from the region of Odessa to their new home on the shores of the Aegean Sea. In Roman times, one of the great Roman roads went up this valley to the provinces on the Danube, and Skoplje (Üsküb) then as now was a trading center on a much used route. During the World War, the German and Allied armies fought up and down the valley for possession of the Balkans. Express trains from Paris and Berlin run through the Morava-Vardar Corridor and turn east to Sofiya and Istanbul, or continue south to Thessalonikē, a free port.

THINGS TO THINK ABOUT AND TO DO

Family work. 1. Write three short paragraphs telling the work of the father, the mother, the children on a Balkan mountain farm.

2. When farmer Cenovitch goes to market, what will he buy? sell? keep to use at home? Arrange your answers in three columns.

3. Necessities of life. Copy and fill in these six columns for the Balkan farmer.

| FOOD | CLOTHES | HOUSES | TRANSPORTATION | TOOLS AND WORK ANIMALS | ORNAMENTS AND AMUSEMENTS |
|------|---------|--------|----------------|------------------------|--------------------------|
| | | | | | |

Word pictures. How many expressions of not more than four words can you find to

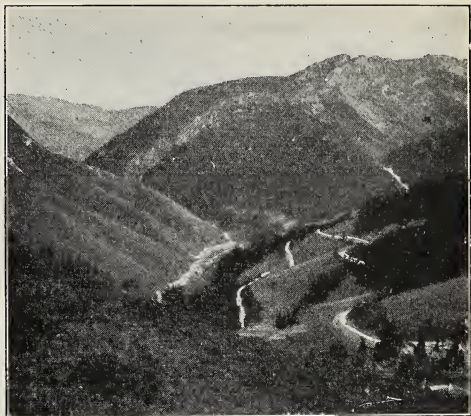


Fig. A. One of many little mountain valleys in the Balkan Peninsula. What two industries could be carried on in these mountains?



Fig. B. Lumbering in Yugoslavia.

describe Michael's home? Here is a start: one-story stone house; beside a stream.

Finders keepers. Write the names of these people in a column. Beside each, write the name of the part of the Balkan Peninsula they took for themselves: Greeks, Romans, South Slavs, Bulgars, Turks.

Countries and people within countries. Write the following names in a column. Beside each, write the name of the Balkan country in which the smaller country or race can be found: Macedonia, Montenegro, Serbia, Turks, Yugoslavs, Illyrians, Croats, Bulgars, Slovenes, Albanians, Greeks.



Fig. A. Cetinje, Yugoslavia. This city was formerly the capital of Montenegro (Fig. 117-A), an independent country which joined with Yugoslavia in 1921. Tell from this picture what the text means by "pocketed peoples."

GOVERNMENTS, PEOPLES, AND INDUSTRIES

Governments and peoples. Yugoslavia means "the country of the South Slavs." Yug (pronounced "yoog") means "south." The South Slavs are three peoples, but all are very much alike. These Serbs, Croats, and Slovenes have a Serbian king and a constitution. They have a parliament when the king does not send its members home. The new kingdom has much trouble within itself. There have been times when the peoples quarreled so much that the king ruled without a constitution. A census taken some years ago in Yugoslavia gave its population as follows:

| | |
|---------------------------|------------------------------|
| Serbs 6,000,000 | Croats 2,600,000 |
| Slovenes . . . 1,100,000 | Macedonian Slavs . 500,000 |
| Magyars 450,000 | Moslem Serbs 625,000 |
| Rumanians . . 150,000 | Germans 400,000 |
| Albanians . . . 250,000 | Others 175,000 |

Why do these figures suggest to you a reason for the many troubles of these peoples?

Bulgaria has a king and a parliament. The Bulgarians, too, have had many troubles in governing.

Albania has a king, but many of the people, back in the mountains, still live in *tribes*. They are known by the name of the tribe, and each tribe has a chief. These people of the roadless mountains have but one name, as Yussuf son of Ahmed. In the plain along the coast, the people say they are citizens of such-and-such a town or district. Here there are some farms, towns, roads, and schools.

The Albanian mountaineers are such very independent people that they do not know how to coöperate very well. Many of them will not even pay taxes; therefore part of their country cannot have roads or schools or hospitals or other improvements found in more progressive countries.

An American relief worker, writing about his Albanian headquarters, said: "The first fortification is a barbed-wire fence. Inside of this is a half-wild dog. Then comes a brick wall two feet thick, peppered with gun holes. There is another dog inside this wall. Then comes the house. The door is massive oak held by a lock, an inside

bar, and a hidden catch. The lower floor has no windows and is used only for stock. The second floor has only very small windows, but the third floor has fairly good-sized windows. Every window has a thick, fairly bullet-proof shutter. The walls of the house are about a yard thick." What does that house tell you of Albania's past?

Albania is nearly twice the size of New Hampshire, and has about twice as many people, but there are still only twenty-two miles of railroad in the whole country. The railroad is near the port of Durrës (Durazzo).

Every farm-village home a factory. The peoples of the Balkans have such poor roads, are so isolated, and have escaped from the rule of the Turk so recently, that most of them are still poor and uneducated, although their lands have many undeveloped resources.

Eighty to ninety per cent of the people of the Balkans are obliged to make in their homes most of their clothing, utensils, and other necessary articles. This is what was done in the United States about the time of the Revolutionary War.

The fields near the villages produce some wheat, barley, and oats, but corn is the chief crop. Tobacco is often grown to sell. Explain why people who live back in the mountains can export wool, skins, and tobacco, but cannot export wheat, corn, and lumber.

Bulgaria. The people of the Bulgarian uplands are not quite so much shut in by mountains as those of southern Yugoslavia. The village farmers grow corn, wheat, fruit, and tend flocks of sheep and hogs on the hills. There are two sheep for each person in Bulgaria, and animals are the chief means of support; tobacco is the most valuable export.

One little valley in Bulgaria is called *the rose garden of Europe*, because fields



Fig. A. Beograd, capital of Yugoslavia, as you see in the picture, is a modern city.

of roses are grown there — about a million blossoms to the acre. Every year, tons of roses are distilled. By this process, three or four thousand pounds of rose petals make a pound of the precious perfume called *attar of roses*.

Sofiya, the capital of Bulgaria, lies in a high, cool valley where rye and potatoes are important crops.

THINGS TO THINK ABOUT AND TO DO

Why's. 1. Why do Balkan people travel much on mule back?

2. Why are most Balkan farms small?

3. Why are many different things produced on each farm?

4. Why are many animals raised on the farms?

5. Why is the ox the chief work animal?

6. Why are sheep so important in the mountains?

7. Why are there many small countries in the peninsula?

8. Why are there many different kinds of people, with different ways?

9. Why is the Morava-Vardar passage-way important?

Writing questions. Here is a very good kind of question to write: Yugoslavia means the country of the ——. The boy or girl who answers the question correctly must put *South Slavs* in place of the blank lines.

Write ten such questions about the lesson you have just studied.



Fig. A. The city of Zagreb, with its background of mountains, is the second city in size in Yugoslavia.

UNDEVELOPED RESOURCES

The prospect. Yugoslavia, Albania, and Bulgaria have a chance for a great increase of industry, wealth, and comfort. In no part of Europe is farming more important to the people. At present there are but few factories. The people export raw produce and import finished manufactures. The governments of Yugoslavia and Bulgaria are trying to build up manufactures. How may there be a great increase of industry, wealth, and comfort in these countries? Six words will give the answer: education, work, roads, machines, minerals, manufacture. Yugoslavia alone is said to have more water power than Switzerland, but she is not using one tenth as much as Switzerland uses.

Minerals. Minerals may help to make the Balkans as prosperous as the Central European uplands. In southern Yugoslavia are mines of copper and iron; and bauxite, from which aluminum is made, is exported from the Dalmatian coast to the United States and Canada. Some gold has been mined and there are several small coal fields. All this mineral wealth may furnish work for many people, but railroads must first be built.

Labor supply. This region has one great

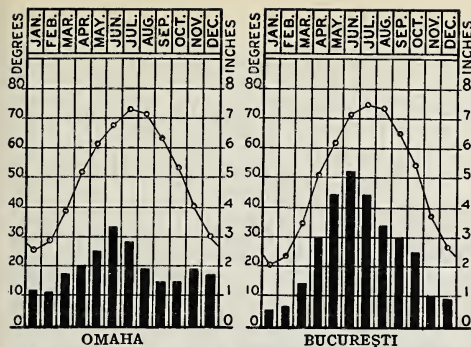
resource necessary for manufacturing, and that is a labor supply. Its population is much more dense than that of any agricultural section of the United States, and a dense population furnishes plenty of labor for factories. In the past, the Balkan peoples, who made their own clothes by hand, sold carpets that they wove by hand. If they should get machinery from England, France, and America, they could make many times as much carpet or cloth. If the Balkans can have peace, we may expect their agricultural output to double, their mineral output to much more than double, and many little valley villages will grow into manufacturing towns with the aid of coal from their hills and water power from their mountain streams. This should enable the people to have better schools and better living conditions.

CHAPTER SUMMARY

A jig-saw puzzle. Separate these word pictures into three columns that describe the three regions of the Balkan peninsula. Write the name of each region above its column of word pictures. Comfortable villages; easy railroad building; tend sheep and hogs; grow corn, wheat, fruit; exports prunes; exports corn and wheat; has Mediterranean climate and crops; patches of soil; rich, flat land; distills rose perfume; many harbors; isolated villages; densely populated; beautiful old towns; faces Adriatic; extends into Hungary and Rumania; steamboat trade on Danube; make their own cloth; grow corn and cannot sell it.

Play salesman. Try to sell the following articles to the people of the Balkan peninsula: schoolbooks, steel rails for railroads, looms for cloth and carpets, farm tractors, mining machines, water-driven electric motor. Let each pupil choose one of these articles to sell; let him write his sales talk, that is, reasons why the Balkan peoples should buy his article. Let him call on a second pupil, representing an Albanian, Serb, etc., to give reasons why he has no use for the article.

A journey. Tell about your preparations for a journey of a month in Switzerland, in Albania. Tell about languages and an American salesman in Yugoslavia.



Figs. A-B. These graphs show how alike are normal weather conditions in Omaha, Nebraska (American corn belt), and București, Rumania (European corn belt).



Fig. C. Average corn acreage in Europe for a period of years. Make a list of the European countries which grow much corn. The lines on the map show corn shipments.

U. S. Dept. Agr

HUNGARY AND RUMANIA

As you read this chapter, get ready to answer this question: In how many ways is this part of Europe like a part of the United States?

CLIMATE

Continental climate. Hungary and Rumania own most of the wide plain of the lower Danube Valley. This region has a climate that differs, both summer and winter, from that of western France or England. The climate of western France takes its temperature from the ocean (page 95). We say that it has an *oceanic* climate. Oceanic climates have less difference between winter temperatures and summer temperatures than do *continental* climates — the climates of places far from the ocean. Trace carefully on Figures 94-A and 95-A the line (isotherm) that shows where the average temperature for January is 32°. What does it show you about Hungary, Norway, and England?

Do the same for the July isotherm of 80°. By the time the summer winds from the Atlantic have reached the Danube Valley, they have been warmed by the land. Therefore the summers are hot. The winter winds from the Atlantic have been cooled by the time they reach Hungary, so that the Danubian winter is cold.



Fig. D. A herdsman with his longhorned cattle on the plains of Hungary.

Indeed, this continental climate, with its hot summer and cold winter, is much like the climate of Nebraska. Most of the rain falls in the spring and early summer, which is fine for corn, and, like Nebraska, this is a land of wheat and corn. It is the chief European corn belt; corn is an export of Hungary, Rumania, and also of the Danube Valley sections of Yugoslavia and Bulgaria.

THINGS TO THINK ABOUT AND TO DO

- Thinking about climate.* 1. Follow carefully the January isotherm of 32° through Europe and North America. Do the same for the July isotherm of 80°. What can you say about the winter and summer weather in the Danube Valley? in the Missouri Valley?
2. What do Figures 181-A and 181-B tell you about these places?



Courtesy Hungarian Consulate

Fig. A. Budapest, capital of Hungary, on the Danube River. The large building at the left was the royal palace when Hungary was a part of the Austro-Hungarian Empire.

HUNGARY

The Magyars. A thousand years ago the Magyars, a nomad people from Central Asia (page 11), drove their flocks and herds into the plain of Hungary. Most of the Magyars finally became farmers in that good land, but in the dry parts some of them still live as herdsmen, with droves of horses and cattle. For a thousand years the Magyars have ruled this part of the Danube Basin, and much of the time they have been one of the important nations of Europe. We know them as *Hungarians*.

The Hungarians believe that the strongest should rule, and so in 1914 they were ruling within their boundaries many Slovaks at the north, many Rumanians at the east, and many South Slavs at the south. The Slovaks, the Rumanians, and the South Slavs were each given a country of his own. After the treaty makers finished their work at the end of the World War, the Hungarian boundary had been pushed in at every point and the country that had had 20,000,000 people before the war had only 7,000,000.

The reorganized nation. The new boundaries cut across railroads, waterways, and roads, and tore apart governmental units like our counties and states. The new boundaries took away nearly half of Hungary's manufacturing plants, four fifths of her forests, most of her iron ore, and three fourths of her sheep pastures.

A nation in a plain. Examine the map and you will see that near the western corner of Hungary the mountains divide; one part swings north to become the Carpathians; the other part swings south along the coast of the Adriatic. The two parts meet like a pair of pincers at the "Iron Gate," where the Danube comes out of the flat plain that is inclosed by this ring of mountains.

Once upon a time this flat plain was a sea. Like the Great Valley of California, it was filled in by the wash from the mountains. Now it is so flat that the River Theiss (Tisza) has a fall of only 15 feet in 150 miles, and is more like a lake than a river. Unless man stops them, the floods cover thousands of square miles

when heavy rains fall and snows melt upon the mountains that surround the plain. Cities can stand on the banks of the Danube only where mountains approach the river and highlands appear. See the location of Budapest, Wien (Vienna), and Beograd (Belgrade).

Permanent farmland. This Hungarian plain built up by mountain wash is rich, level, and stoneless. Three fifths of all Hungary is fit for the plow. No other country in Europe, except Denmark, has such a large proportion of arable land. Hungary's great plain, like the flat lands of Holland and Denmark, can be a land of lasting agriculture.

Climate and crops. We have already learned that the climate of Hungary is much like that of Nebraska; we call it a *continental climate*. The winter is cold; the summer is hot. Also, as in Nebraska, one part has more rain than the other. Western Hungary has 24 to 40 inches, and is a land of wheat and corn, potatoes, and sugar beets. Eastern Hungary has 20 to 28 inches, and much of the land is in pasture.

Manufactures and trade. The new Hungary is not very well fitted for being a manufacturing nation. Her forests were greatly reduced by the treaty. She has almost no coal, iron, oil, phosphate, potash, or cotton, and not much wool. So she is plainly a country marked by Nature to be an agricultural land. She grows enough food for her own use, and exports meat, wheat, flour, corn, and sugar. The railroads, most of which center at Budapest, bring much wheat to this city. Only Minneapolis and Buffalo grind more wheat.

There are manufactures of iron, steel, and farm machinery. There are also textile manufactures—not enough of these as yet for home use, but they are increasing. Her chief imports are raw cotton, cotton manufactures, timber, woollens, and coal. Hun-



Fig. A. Not all of Hungary is plain. The picture shows Lillafüred, a health and pleasure resort in the Mátra Mountains.

gary needs to be on good terms with her neighbors so that all will want to trade with one another.

The future. Hungary has already diked and drained much land, but there is much more that can be made into farms by diking and draining. She has planted some trees to stop drifting sands; by extending this planting, she can get more timber. Fifteen hundred big estates take up one third of the entire farmland of Hungary. About 500 times as many little farms make up another third. Most of the countries of western Europe have divided their large estates. In Hungary, the landowners have been strong enough to prevent this.

THINGS TO THINK ABOUT AND TO DO

Argue the question. "Should the Hungarians farm?" Here are some topics for the affirmative side: soil, surface, transportation, seasons, rainfall, market, extent and ownership of level land. Here are some topics for the negative side: floods, methods of farming, size of estates, sand drifting.

A "before and after" map. 1. On a sketch map of Europe, draw Hungary as it is today (Fig. 116-A), and Austria-Hungary as before the World War (Fig. 117-A).

2. On the map locate the important things and places about which you have studied.



Fig. A. The "Iron Gate" of the Danube River, about which you read on page 182.

RUMANIA

The people of Rumania. In the second century A. D., the Romans took possession of a new province, called *Dacia*, in the lower Danube Valley, and sent colonists there. The Rumanians say that they are descended from the Roman soldiers who went to Dacia to hold the new colony, and took with them Greek wives. The language of these people is somewhat like the Latin.

There are many other peoples in Rumania. The lowland east of the Carpathians is a kind of natural road for peoples migrating from Asia and Russia toward the Mediterranean. Migrating peoples, as a rule, often stop along the way. Bessarabia, alone, is the home of many Rumanians, Russians, Bulgars, Turks, and Jews. To make Rumania's population problem even more complex, there is in eastern Transylvania, just within the horseshoe of the mountains, a solid block of land 50 by 100 miles, where only Magyars live.

The Rumanian land. How does Rumania compare with Iowa in size, population, and population density? Look at the map (Fig. 116-A), and you will see that

Rumania has a mountainous middle, uplands and a plain in the west, and a much larger plain in the east. The Carpathians are a wide mountain system, somewhat higher than our highest Appalachians. Their higher slopes are covered with coniferous forests and upland pasture, to which each summer people from the lowlands migrate with their cattle, as do the Swiss, the Norwegians, and many other mountain peoples.

The Carpathians have wide foothills covered with oak and beech forests, and cut by many valleys with good farmland. To understand the land of Transylvania, you should lay your hand on the table and spread your fingers wide apart. The hand and the fingers represent mountains, and between the fingers are valleys opening to the west. To go from one valley to the next, people go down one valley and up the other. In many troubled days of the past, the peoples of the plain have fled to the mountains for safety. There are many stories, songs, and poems about adventure and life in these mountains.

The wide plain of the lower Danube

Valley has much level land like that of Hungary. Parts of it are made of loess (page 168), which is very rich. The winters, like the winters of Nebraska, often reach 20° or 30° F. below zero, and the summers, like those of Nebraska, are hot. The heat and the summer rain produce a climate that makes it a corn region. But, unfortunately, this lower Danube Valley is farther from the sea than the plains of Hungary. It often has droughts that reduce the farmers' crops.

The Turks, the landlords, and the schools. Rumania has not been an independent country very long. For hundreds of years it was a part of the Turkish Empire, and the Turks have been noted for bad government. Much of the Rumanian land is also in large estates, with landlords who are much more concerned about getting their rent than they are about helping their tenants. So, between the Turks and the landlords, Rumania has had few schools. Even now, more than half of her people cannot read. They know little about science. They are a nation of farmers, but Rumanian farmers know almost nothing about crop rotations, selecting seed, and other progressive methods. The Rumanian crop yields could be doubled if the farmers were as skilful as those of Switzerland, Belgium, or Germany.

The capital, crops, and trade. București (Bucharest), the capital, is the home of the king. Its people sometimes call their fine city another Paris. București has flour mills, oil refineries, and other industries.

The Rumanian farmer grows corn, wheat, barley, and oats, but especially corn. Rumania has more than one tenth as many acres in corn as has the United States, and one seventh as much land in wheat. With much labor, the Danube has been deepened for ocean steamers as far as Galati and Brăila. Each year many steam-



Fig. A. Dancing the national dance of Rumania in native costume.

ers come through the Mediterranean, through the straits into the Black Sea, up the Danube to get corn, wheat, barley, and oats for the ports on the Mediterranean and for western Europe. The Danube boats are important for the trade of every country that touches the river. In the winter the river is frozen, but the port of Constanta is always open and has a year-round trade in grain and oil. From what you know of the needs of such a people, name some of Rumania's leading imports.

Rich resources and the future. Rumania has a much better assortment of resources than has Hungary, Austria, or Switzerland. Twenty-eight per cent of her land is in forest, and wood is an important export. She has an oil field, and oil is her chief export. She has some coal. Of water power, Rumania has 1,600,000 horse power in her mountain streams. Less than one fiftieth of it is being used. Along the Danube, and especially in its delta, are great swamps, where three or four thousand square miles may be drained and made into good farmlands as the Dutch have done.

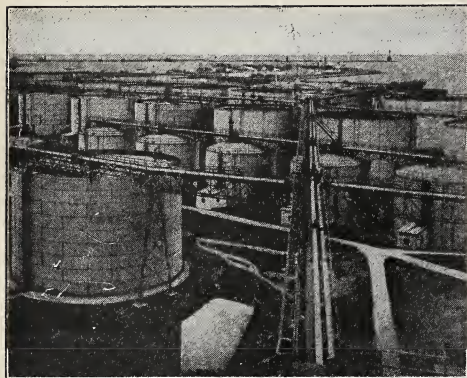


Fig. A. Oil tanks along the water front at Constanta. See the breakwater and the docks in which the ships lie.



Fig. B. Harvesting grain on the plains of Rumania.

Rumania, therefore, has the resources of farming, lumber industries, and manufacturing; she has also a labor supply. Her rural population is 3.6 times as dense as that of Iowa. This means that her farms are small, but if well cultivated by machinery, as they should be, many people who are now working with oxen and poor tools would be free to work in factories. But, first of all, Rumania must educate and change the minds of her people. This is always a hard task and usually requires a long time. The many different languages and peoples in Rumania make her problem a more difficult one.

THINGS TO THINK ABOUT AND TO DO

A map in a circle. 1. Draw lightly in your notebooks a circle about 2 inches across.

Inside, draw free-hand the outline of Rumania. Show: the Danube, Pruth, Dniester, Black Sea, Carpathians, Transylvanian Alps. Color your map green, yellow, brown, to show plains, foothills, mountains.

Where in Rumania? Answer each "where" with the correct choice from the following words: Carpathians, Transylvania, Danube, eastern plains. 1. Where do shepherds migrate with their flocks?

2. Where did people flee for safety in time of trouble?

3. Where are there hot summers and cold winters?

4. Where do ridges separate valleys of farmlands?

5. Where is there much river trade?

6. Where is the country like Switzerland or Norway?

7. Where is the country like Iowa?

8. Where is it like Hungary?

9. Where is the climate like Nebraska's?

CHAPTER SUMMARY

Contrasts. Copy the following in the left-hand column in your notebook or on the board. In the right-hand column write the name of the country which the description best fits. 1. Settled by Greeks and Romans.

2. Settled by Magyars.

3. Long oppressed by Magyars.

4. Long oppressed by Turks.

5. Small farms should be consolidated.

6. Large estates must be divided.

7. Largest city, București.

8. Largest city, Budapest.

9. Has natural land route from Russia and Asia.

10. Mediterranean boat trade in grain.

11. River and canal trade with N. S. E. W. Europe.

12. Area increased after war.

13. Area decreased after war.

14. Few forests.

15. Forests important resource.

16. Has iron, but no coking coal.

17. Has best variety of resources.

18. Must buy raw materials and fuel.

19. Must sell manufactures.

20. Must sell farm products.

21. Much undeveloped water power.

22. Much fuel oil.

23. Rich loess soil.

24. Best industry, farming.

25. Best industry, manufacturing.

26. Most continental climate.

27. Troubled by floods.

28. Least rain.

29. Schools should teach scientific farming.



Courtesy Caterpillar Tractor Company

Fig. A. Much of the land in the Baltic countries and their big neighbor is as flat and as easy to farm as is this field.

THE NEW COUNTRIES ON THE BALTIC

POLAND, LITHUANIA, LATVIA, ESTONIA, FINLAND

WESTERN NEIGHBORS OF RUSSIA

When you have finished this chapter, be ready to write a composition or to tell someone about problems of the new countries on the Baltic, and the trade needs of these countries.

Russia and the sea. Every nation wants an outlet to the sea. For centuries the kings of Muscovy, rulers of the country which finally became Russia, ruled an inland country. For centuries the kings strove to conquer land that would give their country a port on the sea, from which their ships could sail to any country. Finally King Peter the Great got possession of a little corner of land on the Gulf of Finland, where the city of Leningrad now stands. The bit of land was only a muddy swamp, but it bordered the sea, and there Peter built his capital. Russia kept on adding land along the Baltic and the Gulfs of Finland and Bothnia, until she had a long seashore.

If you look at the political maps of Europe (Figs. 93-A and 117-A), you will see on the Figure 93-A five countries touching the Baltic Sea and its arms. These countries, Poland, Lithuania,

Latvia, Estonia, and Finland, do not appear on the Figure 117-A. They won their independence during the World War and in the treaties that ended it. Why were these countries made? There are several reasons.

Buffer states. The big nations are fond of making little nations that will stand between the big nations. They think it helps to keep the peace, because when two countries do not touch each other, there is smaller chance for quarrel. For example, Italy and Germany cannot quarrel with each other over their boundaries, because small Switzerland and small Austria lie between them as *buffer* states.

Make a table giving the area, total population, population a square mile of Poland, California, Lithuania, Minnesota, Latvia, Estonia, Finland, and Maine. Point out some likenesses and differences between the members of this group.

THINGS TO THINK ABOUT AND TO DO

Two sides to a question. Let some of you pretend that you are Russians. Let others pretend that they are citizens of the Baltic states. Choose a "World Court" and give reasons for or against the independence of the Baltic States.



© Henryk Poddebski, Warszawa

Figs. A-B. Most of the boundary between Poland and Czechoslovakia is high mountains. Some of these forest-covered mountains show in the picture together with a group of Polish mountaineers in national costume. The Polish girl at the left has on a bridal costume.

POLAND

Polish location makes trouble. If you read newspapers that give foreign news, you will often read of Poland. Sometimes it almost certainly will be — Poland in trouble. Much of the trouble will come because Poland, like its new neighbors, lies in a wide plain with *no natural boundaries of land*. She has no mountain wall like the Alps at the north of Italy, the Pyrenees at the north of Spain, or a narrow sea wall like that of Britain, or a wide ocean wall like that which puts the United States so far from most countries.

There Poland lies in the middle of the great plain of Europe, in the highroad of migrating peoples. Therefore the peoples are of many kinds. You cannot draw a line and separate the Poles from any of their neighbors. On this relatively level plain it has been easy for armies to march across Poland. She has been invaded many times, and she has the possibility of more such invasions yet to come.

Ancient greatness. Poland has had a great past. There was a period when she

was one of the largest countries of Europe. In the 1600's her western boundary was near the River Oder; her eastern boundary was beyond the Dnieper. In that day of greatness, she reached from the Baltic to within a hundred miles of the Black Sea. Her area was about equal to that of the present area of France and Germany. For many years Warszawa (Warsaw) was one of the great capitals of Europe, and Poland was a great power. Then she was involved in a series of wars. These resulted in what is called the *Partitions of Poland*. Prussia took a piece, Austria took a piece, and Russia took a piece. There were two other partitions — and Poland was no more. The once proud country became merely a part of the German Empire, the Russian Empire, and the Austro-Hungarian Empire.

The divided people. The Russians tried to make the Polish people speak only Russian, hoping thereby to make them Russians. The Germans tried to Germanize the Poles. The Austrians tried to Austrianize them. But for nearly a hundred



© Henryk Poddebski, Warszawa

Fig. A. A part of the waterfront of the new Polish port, Gdynia, about which you will read on this page.

fifty years the people of the broken nation remembered their past. They clung to their own language, preserved their national pride, and held to the idea that they would again be a nation. Above all, the Polish landowner kept his land in spite of everything. But when the treaty makers tried to give the Poles their own country, the Poles wanted all that Poland had ever had in the days of her greatest greatness. Therefore she is angry at Germany, at Russia, and at Lithuania.

The "Polish corridor." Then there is the "Polish corridor" (Pomorze), a name given to the part of Poland which cuts off East Prussia from the rest of Germany (Fig. 92-A). Most of the people who live in the corridor are Poles. In giving to Poland this strip of land with Polish people, the treaty makers also gave Poland an outlet to the sea. But most of the people in the port city of Danzig, at the northern end of the Polish corridor, are *Germans*. The Germans did not want the Poles to rule them. Danzig was therefore made a "free city" (an independent

nation, almost) under the League of Nations. It is ten times the size of the District of Columbia. It was made to be the free outlet for Polish goods and for German goods. The Germans want Danzig and the corridor. The Poles want to be entirely independent; so, at great expense, they have made a new seaport city, Gdynia, entirely in Polish territory.

Climate and land. Poland's climate is continental; her rivers are frozen longer each year than those of eastern Germany, and those of eastern Germany are frozen longer than those of western Germany. Poland has a rainfall of about 20 to 24 inches; bad droughts come seldom.

The great continental glaciers passed over the country, piling up sand and clay, damming up the rivers. This made large areas of marsh in the flat plain. Some of the marshes have been drained; much more territory could be drained.

Most of the Poles are farmers. Although Poland is one of the most industrialized countries of eastern Europe, two thirds of the population are engaged in



Courtesy Consul General of Poland

Fig. A. In Europe Poland ranks third in the production of petroleum, being exceeded only by U. S. S. R. and Rumania. About five million barrels of petroleum are produced each year. The oil field in the picture is in southeastern Poland near the border of Czechoslovakia.

agriculture. The new government found many very small farms and a small number of big farms that had nearly half the land of the country. One of the first things the new government did was to break up the big estates into many small farms. The farm population is five or six times as dense as that of the United States; therefore the farms must be small.

Rye is the chief grain because it does well in a cool climate and a sandy soil. The other leading crops are oats and potatoes—enormous quantities of potatoes. These three crops cover about 60 per cent of Poland's plowed acres, while wheat, flax, and sugar beets grow on the better land. The Poles grow more potatoes a person than any other people. The climate is enough like that of Maine and Wisconsin to suit the potato plant. The heavy yield of potatoes helps the farmer to make a living on a small farm. Factories make potato starch, potato flakes for stock food, potato alcohol for automobile fuel, and potato sirup for use in making candy.

Good raw materials for manufacture. If you read European history, you will learn

about Bismarck, the maker of the German Empire. He said, "Who so controls the Silesian coal field (page 129) controls Central Europe." He meant that they would have coal to run factories, make iron, build railroads, machinery, and cities. This would increase the population and would provide many soldiers and arms. The Poles happen to live over most of this coal field, and therefore they got most of it when new national boundaries were drawn.

The Silesian coal field is one of the best in Europe. In one place there are six seams that have, altogether, sixty feet of coal, and this coal is easy to mine. There are also important deposits of lead, zinc, and some iron, a small oil field along the north slope of the Carpathians, and potash deposits which supply an important part of the needs of the country for potash fertilizer.

Manufactures and lost markets. The manufacturers in the new Poland found their markets partly gone. Those manufactures that had been in the part of Poland ruled by Germany or Russia or Austria-Hungary had each the whole market of its

large country. Now that Poland is independent, tariffs have been set up and Poland can no longer sell as before in the old markets. The Poles had more factories than they had markets. Therefore they have had a hard time in getting their new nation started.

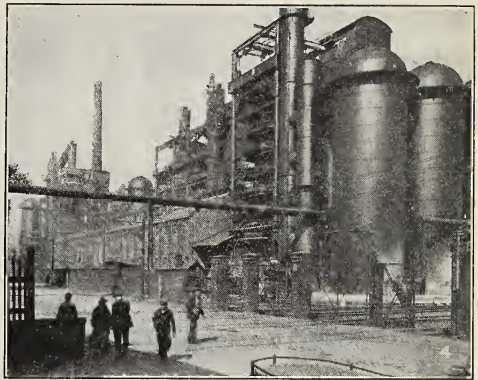
Chief Polish cities. Warszawa, the ancient capital, is a large city. Find an American city with about the same number of people. Łódź is a great cotton-manufacturing center, and Lwów, an old university town, has manufactures of linen and many small industries. The coal and iron industries are near the corner of the country where Poland, Germany, and Czechoslovakia meet.

Self-sufficiency. With her large amount of forest, her stock farms, her fields of grain and potatoes, and her manufactures, Poland has more complete resources than any other country of central or western Europe. Therefore she does not need so much foreign trade, because she can so nearly take care of herself. Poland has the people and the resources to become a powerful nation. West of Russia, only Britain, France, Germany, and Italy have more people. The Poles point to their high birth rate and say that they will soon have more people than either Germany or France.

Troubles at home. This new country has another lot of troubles. People in the different parts of Poland have been separated from one another so long that they find it hard to work together again. The people are 69 per cent Poles; 15 per cent Ruthenians (in the southeast); 8 per cent Jews; 4 per cent Russians; 3 per cent Germans; other nationalities, 1 per cent.

THINGS TO THINK ABOUT AND TO DO

Draw or trace a map of Poland. Show the Oder, the Vistula, and the Dnieper rivers; the Carpathian Mountains. Draw a ring around the Silesian coal fields. Show Po-



Courtesy Consul General of Poland

Fig. A. Poland produces about one quarter of a million tons of iron ore a year to supply raw material for her iron foundries such as the foundry in the picture.

land's neighbors. Put differently colored dots on the parts of Poland that formerly belonged to Germany, to Russia, to Austria-Hungary.

"Count your blessings." This would be good advice to Poland. 1. What things are good about: her corridor? her surface? her climate? her minerals? her people? her soils? her climate? her location?

2. Which is better and why: the Polish corridor or the Rhine-Elbe-Danube Commissions (pages 125, 172, and 189).

Poland's riches. List 3 good land crops of Poland; 3 sandy-soil crops; 6 valuable minerals.

True or false? Rewrite these sentences, making them all correct. 1. Poland does not need to trade much with foreign nations.

2. Poland's people speak one language.

3. Poland is well protected against enemy neighbors.

4. Germany taught the Polish farmers scientific farming.

5. The Polish corridor will bring peace to Europe.

6. Danzig is a Polish city. Gdynia is a "free city."

7. All the Polish farms are small.

8. Tariffs now keep Poland from selling goods in her old market.

9. Poland has the people and resources to become a powerful nation.

10. Poland is poorly located for trade with other countries.



Figs. A-B. In winter the Baltic countries and most of Russia are covered with a mantle of snow, lakes are frozen, and the people go about in sleighs. The Lithuanian girl at the left is dressed in national costume.

LITHUANIA, LATVIA, AND ESTONIA

German landlords. In each of these small countries the Germans have owned most of the land and conducted most of the town business for hundreds of years. About the year 1200, a great many German knights sailed down the Baltic, settled along the shores, took possession of the forested land, and forced the people to become their tenants or serfs. This land had been ruled at different times by Poles, Swedes, and Russians, but no matter who ruled, the German landlord kept his own German language and his German culture and held his land. At the beginning of the World War, these German landlords had most of the foreign trade and controlled the local government under the Russian Czar. Meanwhile the Lithuanians, the Letts (Latvians), and the Esths (Estonians) kept on speaking their own languages, even though the Russians tried to Russianize them.

Dependence on farms and forests. These three small Baltic countries have few resources; most of their land is relatively flat and was originally forest, marsh, and peat

bog. They are a part of the great forest belt of northern Europe (Fig. 6-A), much of which is still in forest. They have no important minerals and little water power. Most of the people make their living by farming; in Lithuania, 80 per cent of the men are farmers. Forest products, lumber, wood pulp, and paper are the chief exports, and pulp and paper are the chief things manufactured for export. Peat and wood furnish most of the fuel.

In all three countries, the big estates of the German landlords have been broken up to make small farms, and the governments are doing all they can to help farming. The cool climate makes rye, oats, barley, potatoes, and flax important crops. The damp, cool summer along the eastern Baltic is well suited to flax; and from the fiber grown in Poland, Lithuania, and Latvia, much of the linen of Europe and America is made.

The Letts, Esths, and Lithuanians have recently learned from Denmark the art of making good butter. All are striving to increase their butter exports, which already rival the forest exports.



Fig. A. The young men and women in the picture live in Estonia. They have put on native costumes in order to dance the *danse nationale* (national dance) of their country.

Ports. Much Russian trade passes in and out through the Baltic states. Most of the railroads were built when Russia governed the land; they were built chiefly to carry the exports of Russia to the Baltic ports of Tallinn (Reval), Riga, Windau, Liepāja (Libau), and Klaipėda (Memel). These ports are all visited by many ships carrying wood and butter to Great Britain in return for —. You make a list of the things.

THINGS TO THINK ABOUT AND TO DO

From north to south. Copy this chart and name the Baltic countries and peoples:

| | COUNTRIES | PEOPLES |
|----|-----------|---------|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

New definitions. Write a complete definition using each of the following expressions:

- Those who pay rent.
- Noblemen who fought and took land.
- Those who own and rent out land.
- Who ruled the Baltic states.
- Those who controlled trade, farms, and local government.

What was happening. What was happening in the Baltic states about 1200? from



Fig. B. Lithuanian farm folks stop harvesting for a moment to have their pictures taken. Father has been reaping grain with a scythe while mother and son tied the grain into sheaves.

1200 to the World War? about 1700 to 1800? about 1800 to 1900?

In a few words. Copy the following chart and in each column write facts about the Baltic states.

| COUNTRY | SURFACE | MINERALS | EXPORTS | MANUFACTURES | FARM PRODUCTS | CLIMATE |
|---------|---------|----------|---------|--------------|---------------|---------|
| | | | | | | |

Buffer states. 1. What is a "buffer state"?

2. Are the people of the Baltic countries glad or sorry there are such things as buffer states? Give reasons for your answer.



Courtesy Legation of Finland

Fig. A. A part of the great forest of Eurasia. This picture was taken in Finland.

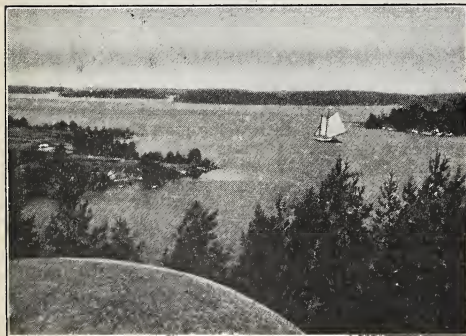


Fig. B. One of Finland's many lakes. Why does Finland have so many lakes? In the lower left corner is a glacial boulder.

FINLAND

A high civilization. For six hundred years Finland was a part of Sweden; therefore she represents the civilization of western Europe. In 1809 Russia took her, but she let the Finns really govern themselves

until a few years before the World War, when Russia started to Russianize Finland.

A hard, cold land. The Finns did not become civilized because they had a fine country. They are the most northerly nation in the world. What part of North America has the same latitude? Finland might have been called *Northland*. The Finnish national song refers to the country as "land of a thousand lakes." It is estimated that there are 35,000 lakes in Finland. They cover eleven per cent of its area; lakes, marshes, and peat bogs cover a fourth of Finland.

The glaciers that piled earth up in Germany and Poland scraped much earth from the surface of Finland, just as a similar glacier did north of Lake Superior. What January isotherms cross Finland (Fig. 95-A)? In winter every stream and every lake becomes an ice road; every harbor on the Baltic is tightly closed, except two at the extreme southwest of the country. These two are kept open by five government ice breakers (specially built steamers), that go back and forth breaking a channel open as fast as it freezes. Can you tell why Finland has one open harbor on her northern coast, while the Russian port of Arkhangelsk is closed for nine months (page 94)?

The Finnish farm. Finland is eight times as large as Denmark, but she has so many stones and swamps that Denmark has more farmland. Only one sixteenth of Finland is cultivated, and only a thirtieth is in pasture or meadows, yet the Finns are a nation of farmers. Only twenty per cent of the people live in towns. In the United States, more than half of the people live in towns. The Finnish winter is so long that farmers can pasture their cattle for only three or four months. The short summer is hot, but frosts come late in spring and early in fall,



Figs. A-B. Two of the leading industries of Finland: dairy farming and lumbering. During what season were these pictures taken?

and the only important crops are oats, potatoes, rye, barley, and hay. As in Norway, there is more land in hay and permanent meadows than in everything else put together. The long summer day helps the farmer. He can see to work at ten o'clock at night, and the long hours of light help the plants to grow quickly. In the Åhvenanmaa (Åland) Islands in the south, it takes barley 116 days to ripen, but it ripens in 63 days at 68° north.

The two-job farmer. When winter comes, thousands of Finnish farmers leave the farm and the cows to be cared for by the wife and children, and go to the woods to fell trees. When spring comes, the logs are floated down the streams, rafted across the lakes, and down the rivers.

Minerals and water power. Finland has a very small mining industry, although there is one large deposit whose ore contains 4.5 per cent copper, 28 per cent iron, 27 per cent sulphur, and 1 per cent zinc. There is plenty of granite, used extensively for building, and of limestone which is used in the manufacture of cement; but the chief wealth of Finland, aside from her fields and forests, is in water power. She has nearly 1,800,000 horse power, good for nine months of the year, and nearly one



Fig. C. The ice-breaker, *Sampo*, at work keeping open the southern ports of Finland.

seventh of it is in use. Power lines run through most of the southern part of the country, where are most of the cities, most of the manufacturing, and most of the people.

Wood money. If it were not for money derived from the sale of wood, Finland could scarcely exist. Lumber, wood, and wood products make up about 85 per cent of the Finnish export. She sells 600,000 tons of pulp a year, and a billion board feet of lumber. Each spring, upon the opening of the Baltic Sea, hundreds of steamers from Germany and other countries of western Europe rush to the Baltic to get loads of lumber, poles, and mine props that have been collected through the winter.



Fig. A. A family of Laplanders and their summer house.



Fig. B. Father and son in Lapland.

Paper mills, pulp mills, sawmills, and other woodworking industries are the chief manufactures in this country of meager resources, but of industrious, well-educated people. The capital, Helsinki (Helsingfors), is a city where an educated person would find many interesting people. Its important harbor is frozen shut in winter, but that of Turku (Åbo) is kept open.

The tundra and the Lapps. What is the natural vegetation of northern Finland (Fig. 6-A)? This treeless land north of the forest zone is called the Arctic *tundra*. It is frozen most of the year, and slushy most of the summer because the ice under it never thaws far down. The long hours of sun let grasses, herbs, and mosses grow. The reindeer is perfectly at home here, because he can eat these plants. He has a thick coat that keeps him warm in winter. Long ago men tamed the reindeer, and so northern Finland and the rest of the tundra of northern Europe and northern Asia is the home of tent dwellers who follow the reindeer and live much as the Kirghiz live. Oh, what a cold job it is in winter! Northern Finland is the home of people called *Lapps*, and where they live is called *Lapland*.

THINGS TO THINK ABOUT AND TO DO

Why, how, and what. 1. Why is Finland's civilization like that of western Europe?

2. How was Finland treated by Russia?

3. What tells you that the Finns are highly civilized?

Poor Finland. Finland did not have natural wealth to start with. Explain this by describing her surface, soil, climate, crops.

Draw a map of Finland. Draw her northern and southernmost parallels. Trace the 20°F. isotherm. Write "open" and "closed" along the proper parts of her coast. Show Arkhangelsk in Russia. Draw the Ålvenanmaa Islands. Locate two of her largest cities.

List Finland's riches. List under columns headed: farm crops; forest crops; minerals; power; exports; manufactures.

Finland's hardships are a blessing in disguise. How does her climate help the farmer? How do her lakes and swamps help lumbermen? manufacturers?

Use these words. Use each of the following words in a sentence about Finland: peat bogs, ice breakers, glaciers, isotherm, float-way, mine props, meager resources, tundra, reindeer, tent dweller.

Finland is like other countries that we know. 1. How is her surface like the Lake Superior country?

2. How is her work like that of the Danes?

3. Her power like that of Scandinavia?

4. Her farmers' winter work like that of the Swiss?

5. Her climate like Sweden's?



Fig. A. Lapps and a herd of reindeer in northern Finland. This land, as you see, is bare. It is too far north for trees. Do the shadows tell you what time of day the picture was taken?

THE TWO GREAT PROBLEMS

Few resources, neighbors, and trade. Lithuania, Latvia, Estonia, and Finland have few resources; therefore they can produce for export only a few articles. If their stores are to have the thousands of things that you can find listed in any big mail-order catalog, the people of these countries must trade with the people of many other countries. All nations depend on their neighbors to some extent, but nations with so small a variety of resources are *very dependent indeed upon their neighbors*.

War — the constant fear of the eastern Baltic states. Lithuania and Poland are hurting each other's feelings over the port of Klaipėda (Memel), in almost exactly the same way that the Poles and Germans are doing over Danzig. But the great fear of all these new nations is that Russia will get them again. Russia says she wants the Baltic ports again, and many Russian people go into these neighboring countries and try to persuade the people to make a government like that of Russia.



Fig. B. A schoolhouse in Lapland.

THINGS TO THINK ABOUT AND TO DO

Explain: Explain what is meant by the title of this section: "The Two Great Problems."

It is poor business to be angry with neighbors. Prove this by copying and filling in the following blanks: Things that the Baltic states must sell are _____. Things that they must buy are _____.

CHAPTER SUMMARY

Give a two-minute talk. Give a talk or write a paragraph about the problems of the Baltic states. Here are some points to remember: their new government, their old enemies, their mixed people, their lack of natural boundaries, their poor soil, their poor surface and climate, their few resources.

Should they form a "United States of the Baltic"?



Figs. A-B. The taiga in winter and in summer. As you study "The Belts of Land," be sure to look closely at the following pictures: the tundra (Fig. 197-A); the taiga (above); the farm-forest zone (Fig. 199-A); the good grassland (Fig. 200-A); and the steppes (Fig. 1-A).

THE UNION OF SOVIET SOCIALIST REPUBLICS

When you have finished studying this country, make a list of the important things that it can produce within its own borders; another list of the important things that it will need to buy from other countries.

THE BELTS OF LAND

Map study. The official name of our own country is *The United States of America* (U. S. A.); and the country we call Russia is now a part of the very large country called *The Union of Soviet Socialist Republics* (U. S. S. R.). It is often spoken of as U. S. S. R., and we shall speak of it in that way, although many people simply call it Russia.

You must get the map of U. S. S. R. fixed in your mind. Find *Russia* on Figure 93-A; find *Siberia* and *Turkestan* on Figure 3-A. *Siberia* and *Turkestan* are names like *New England* in our own country. *Siberia*, like *Turkestan* and *New England*, is composed of several states. The states of *Russia*, *Siberia*, and *Turkestan* are called *Soviet Republics*. On Figure

93-A, you will find another group of Asiatic soviet states between the *Black Sea* and the *Caspian Sea*. These are sometimes called *Trans-Caucasia* (*trans* means "across"; hence, across the *Caucasus Mountains* from *Russia*).

To see the whole of U. S. S. R., turn to Figure 99-A. Trace this map; put in the boundaries of U. S. S. R.; measure the length and breadth of the United States; measure the distance (Fig. 99-A) from the southwest corner of *Russia* near *Odessa* to *Bering Strait*; then from *Siberia's* northernmost cape to the southern point by *Afghanistan*.

In a few sentences, tell what you learn from these measurements. What does the Appendix tell you about the size of U. S. S. R.?

The most gigantic country. When *Russia* was conquering lands so that she might reach the *Baltic Sea* and the *Black Sea*, she was also conquering in other directions. The *Russians* boast that they now

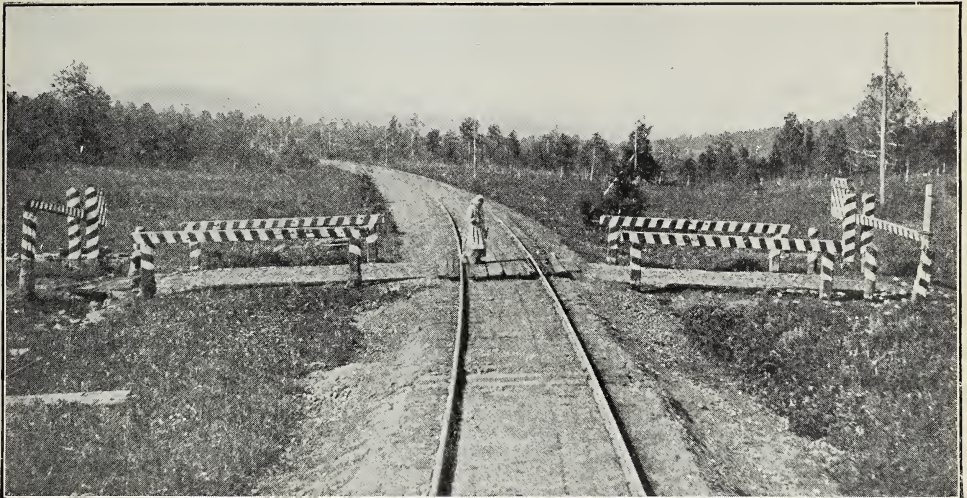


Fig. A. The farm-forest zone where the forests can be cleared and the land cultivated. The picture shows a cattle guard at a highway crossing along the Trans-Siberian Railroad.

rule 200 different nationalities, whose people speak 150 languages or dialects.

The figures are so immense that it is almost impossible for us really to understand how big U. S. S. R. is. Think of your own country and your own state and of the whole United States; then remember that in Europe and Asia all of U. S. S. R. is larger than the United States, Canada, and Mexico. It is forty times as large as France. Scattered over its vast area are thousands and thousands of villages, and millions and millions of peasants. There is a big city here and there, but there are not as many as in the countries of western Europe.

The Russian zones that Nature made. Nature divided Russia and Siberia into several natural regions. These slices are called:

1. The Tundra.
2. The Great Northern Forest, or *Taiga*, too cold for farming;
3. The Farm-Forest Zone, where farms can be made.
4. The Good Grasslands, where wheat will grow.

5. The Steppes, Deserts, and Oases, homes of nomads and irrigation farmers.

Point to each slice on Figure 6-A. Be sure to refer to this map, its legend, and pictures as you study each slice.

1. The northernmost zone — the tundra. The tundra is a land too cold for trees, a land where ice and snow and freezing weather last for eight or nine months of the year.

In summer, when the sun shines for weeks without ceasing, moss, bushes, grass, and flowering plants grow surprisingly fast, even though the ground thaws only to the depth of about two feet. Berries ripen — berries that are good to eat — and waterfowl come by the millions from lands far away to the southward. The tundra is the home of the reindeer and of the Laplanders, who follow the reindeer in Russia and Finland (page 196). In the Siberian tundra are other reindeer keepers, called Samoyeds, Ostyaks, Tunguses, and Chuckchi. In summer, these nomad people pick berries, catch waterfowl, and collect eggs and store in ice for winter use.



Courtesy Caterpillar Tractor Co

Fig. A. The good grasslands where wheat and other grains will grow. This particular Russian peasant farmer uses a two-humped camel as a draft animal.

2. **The great northern forest.** South of the tundra, as in North America, is a great belt of forest. It covers most of Sweden and extends through Finland, northern Russia, and Siberia, to the Pacific Ocean. It, too, is a land too cold for farms, a land of evergreen trees and birches, of lakes, swamps, peat bogs, buzzing mosquitoes, fur trappers, hunters, and fishermen. The northern forest is the home of men who live far apart; men who do not speak the Russian language. If you walked ten miles a day — and that would often be farther than you could go in a day — how long would it take you to walk the length of this forest?

3. **The farm-forest zone.** The forest belt changes near the Gulf of Finland. More of the trees have broad leaves, such as those of the maple and the beech. This part of the forest belt, wide in Europe but not so wide in Asia, has a climate that permits a man to have a farm, if he cuts away the forest. This part of U. S. S. R. is much like Poland and the other Baltic states, except that the winters get colder as you go farther from the sea. At the north, the most important crops are potatoes, rye, oats, and fodder beets. East of Poland is a middle region where

barley, oats, flax, and sugar beets are most extensively grown. These, you will remember, are the main crops of northern agriculture in Europe and America.

4. **The good grasslands.** Southward from the farm-forest zone is a wide belt of good grassland (Fig. 6-A). You remember that in Minnesota we passed from forest to a level plain where Nature had made rich black soil and covered it with grass, not trees — a plain good for wheat and other small grains. This wide, treeless plain of Russia and Siberia has a similar zone of black earth lying at the southern edge of the forest zone. It extends from Rumania to the mountains near Lake Baikal; and there is more of it on beyond the mountains, in eastern Siberia and in Manchuria. There is enough wheat land east of Lake Baikal to feed more people than are in France, Germany, or Great Britain. This black-earth area of Russia and Siberia is the largest wheat region of the world.

The part of this black-earth grassland in Russia, that lies between Rumania and the Caspian Sea, is much like Rumania or Nebraska or Kansas, and it produces the same crops of *winter wheat* and corn — much wheat, but not so much corn, because of



Fig. A. You are looking through one of the passes in the Caucasus Mountains in Georgia (Fig. 93-A [T-3]). The raising of fine sheep and the exportation of wool are two of the chief industries of this Soviet Republic.

the light rainfall. For many years before the World War, the grain ships of western Europe flocked to Odessa and Kherson, Kertsch, Rostov, and Taganrog, and there loaded cargoes of Russian wheat for discharge at Napoli, Genova, London, Anvers, Hamburg, or Oslo.

You remember that in Kansas the American black-earth plain produced *winter wheat*, and in Dakota, Minnesota, and western Canada the winter is so cold that there they grow *spring wheat*. The colder continental climate makes a similar change in U. S. S. R. Most of the wheat that grows north of the Sea of Azov and east of the Dnieper and in Siberia is *spring wheat*.

5. The nomad steppes and the deserts. Southward from the wheat lands, farther toward the heart of the great land mass, there is less rain, more heat. The farmer cannot get a crop of grain. There is only pasture on this great flatness called *the steppes*.

THINGS TO THINK ABOUT AND TO DO

Building the striped map. 1. On a sketch map of Eurasia, outline in black the boundaries of Russia.

2. Draw the Arctic Circle.

3. Using five different colors, shade lightly the natural zones of U. S. S. R. (Keep a color key.) Shut your eyes and try to picture your map in your mind.

Word pictures in five columns. 1. Make five columns and fill with short phrases about the animals, peoples, crops, and climate of the five zones of Russia.

2. Use the word pictures, and make up riddles about Russia's five zones; as, "It is too cold for farms. Only hunters and fishermen live there. It is covered with evergreen trees. What is it?"

Let us travel. Suppose we travel from Odessa to Bering Strait; from northern Siberia to Afghanistan: show your trip on the map and write or tell five sentences describing your journey. For instance, "I am traveling through a land of ice and snow. Now I see —, etc."



Fig. A. At Baku (Fig. 93-A [T-3]) the oil wells are drilled to the very edge of the Caspian Sea. The oil is carried by pipe line to Batum for shipment. Name some places in America which this resembles.

RESOURCES AND SOME PROBLEMS OF U. S. S. R.

Great resources. U. S. S. R. has nearly one sixth of the land area of the world. She has the largest forest in the world. It is estimated that she grows nearly four times as much timber each year as does the United States, but cuts only one third as much. She has the largest belt of good wheat land. She has more people than any other country except India and China.

The platinum mines of the Urals make her one of the chief producers of this precious metal, and she has enough iron ore to last for many years.

Oil, coal, and water power. Russia has a resource that is easy to get — petroleum. For many years, she has been one of the great oil producers because of the rich field at the eastern end of the Caucasus Mountains, near Baku. Before the World War, pipe lines were built to Batum on the Black Sea, and tank ships carried oil to many countries.

Russia has some good coal, but not nearly so much of it as has Canada or the United States. The Donets field near the lower Don has outcrops of coal that extend

along a distance of 230 miles, and throughout an area of nearly 9,000 square miles. In additional large areas of this field, the coal is deeply covered, and there are no outcrops. In some places, as many as forty seams can be worked. U. S. S. R. claims to have found even greater deposits of coal in Siberia.

U. S. S. R. has great water power — more than all the rest of Europe outside of Norway and Sweden. But resources are not goods until man can use them in industries, and with them make products for the life and comfort of man.

U. S. S. R. handicaps. When one examines the location of England, Germany, or the United States, and then examines U. S. S. R., one can see many reasons why it will be hard for Russia to create the industries that are necessary to make her people comfortable.

U. S. S. R. is too far north, and has a continental climate. Moskva (Moscow) is about the same latitude as Glasgow, but the coldest January days in Moskva are 50° F. colder than those of Glasgow, and in July the hottest days are 12° F. hotter. Even the southern part has a snow cover for two months. The Volga is frozen at



Figs. A-B. Two village scenes in U. S. S. R. Why are the houses built of wood? Why are the roofs steep? How does the farmer reap his grain?

Astrakhan for three months. In U.S.S.R., a summer temperature of 100° F. is common, and so is a winter temperature of 30° or 40° F. below zero.

The dozing village. From November until April, the land where most of the Russians live is blanketed in snow, ankle deep, knee deep — sometimes even waist deep. Over most of this vast stretch, 10° F. is considered a warm winter day, and fierce, cold winds often blow.

You may think of the Russians as living for months in a vast snow field in which are villages — hundreds of villages, thousands, tens of thousands, even hundreds of thousands of villages — scattered about in millions of square miles of snow. These villages are the homes of the peasants, the Russian farmers who make up most of that great population. Most of the families live in two-room houses, some even in houses having only one room. The floor is often of earth, and a foot or two of earth is commonly banked up against the walls outside the house each autumn to keep out some of the cold. During this half of the year, almost nothing can be done on the farm but feeding the stock, or cutting

wood if the village is lucky enough to be near a forest. In the southern and southeastern parts, where there is no wood, straw is often used for the little fire they can have.

When the snow melts, the village street, which has no drainage, becomes a mass of ruts and mudholes.

Lands that are locked. In Sweden and Maine, logs are floated downstream to market, but most of the rivers of U. S. S. R. drain to the Arctic, and most of the Arctic is so shut with ice that ships cannot enter it to get freight at any time. This is a great loss to mankind. If these rivers flowed to a southern sea, they might make U. S. S. R. by far the world's greatest lumber exporter. The streams that flow to the White Sea show what the country misses in most of her great forest. In the summer, ships can reach Arkhangelsk (Archangel), and logs can float down the Dvina River from a part of the great northern forest. Therefore Arkhangelsk, like the ports of Sweden and Finland, has sawmills, paper mills, and a great lumber export. Each spring, when the snows melt, lumber and rafts of logs are floated down

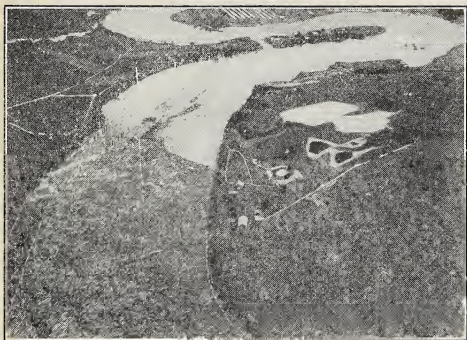


Fig. A. Floating logs down one of the branches of the Volga in Russia.



Fig. B. When the logs become jammed in the stream, the lumbermen must walk out on the floating logs and loosen them. This is dangerous work.

the Volga from its forested upper branches to the villages and cities along its banks in the great treeless area.

U. S. S. R. is big, but much of her land has few people and cannot be made to support a dense population.

Let us now examine the zones of Siberia.

Map study. Three of Siberia's five zones are poor. The tundra (Fig. 6-A) has only a few nomads, and most of the great forest has only a few hunters and fishermen. In the south, with dry lands in both Russia and Turkestan, one fifth of U. S. S. R. is too dry for farms. Therefore, of the five zones in Asia, only two —

the narrow farm-forest belt and the wider wheat belt — can feed a large population. Examine the map and tell how this central area of good land is shut away from the ocean at the north, the east, the south, and the west.

A Siberian exile. The Russian government once sent people to Siberia instead of sending them to prison. Siberia was so remote, so isolated by Nature, that exiles could seldom escape.

In 1910, the czar of Russia exiled a man to northern Siberia. The exile, Vladimir Zenzinov, has written a thrilling book — *The Road to Oblivion*.

Mr. Zenzinov, with many others, in charge of Cossack guards, went by train to Irkutsk. They started from there at Christmas, in a temperature of 40°F. below zero, and walked through the snow to a prison town on the banks of the Lena. The cheapest way to go down this river is by barge; so our traveler stayed in prison until late in May, and then in three weeks floated down the River Lena, about 2,000 miles, to the city of Yakutsk. Mr. Zenzinov and his companions could not travel overland in summer, because the thaw had made many flooding streams, and had turned much of the country into a swamp. They waited at Yakutsk until the ground froze in the autumn.

The first 200 miles out of Yakutsk were by horseback. Then they changed to reindeer, and on January 19 reached a Yakut village 100 miles from Russkoye Ustye. They had made this part of the journey by getting fresh teams at the camps of the nomad Yakuts, Tunguses, Yukagirs, and Chuckchi. The last 100 miles were made by dog teams owned by the six families of Russians who lived in the little village of Russkoye Ustye, on the shores of the Arctic Sea.

Railroads — boats. The Trans-Siberian



Figs. A-B. The new in Russia and Siberia. The girls at the left are members of the Women's Athletic Club of the Soviet Union. Above are new settlers and their hut near the Trans-Siberian Railroad in Siberia. Notice the flat grassland back of the hut.

Railroad was built from Moskva through Russia, and on across Asia through the long area that is good for farms. Russian emigrants spread along the railroad from Omsk to Vladivostok, a distance of 4,000 miles. The settlers in western Siberia had the Danes teach them how to form co-operatives and how to make butter, which was exported to Great Britain and Germany before the World War disarranged the trade of Europe.

In western Siberia, the navigable tributaries of Siberian rivers served as feeders to the railroad, but only one of these rivers, the Ob, has any commercial outlet to the sea, and that only for a month or two in summer, and in some years it has no commercial outlet at all.

Railroads and cities. Before the World War, the United States, with nearly 3,000,000 square miles of territory, had 250,000 miles of railroad. Russia, with nearly 8,500,000 square miles, had 46,000 miles of railroad, but by 1935 this had been increased to about 52,000 miles.

In 1930, the United States had 93 cities each having more than 100,000 people; U. S. S. R., with more people, had only 62 such cities in 1933. A great city can only be supported by great city industries, and this requires extensive movements of freight to the city and away from the city. The flat plains of U. S. S. R. have 50,000 miles of rivers on which boats may go, but in many of them the water is too low for a part of the summer to permit boats to pass. In winter the rivers are frozen for months at a time. Thus, the Don river is navigable for only 100 days; the Volga, for 150 days.

The Volga, the greatest of Russia's river highways, with its branches, gives 19,000 miles of boatway. On the banks of the Volga are eight of the largest cities of the U. S. S. R. It is most unfortunate that this great river flows into an inland sea, most of whose shores are desert.

An uneducated people. All through the nineteenth century, the Russian peasant grumbled, if he dared, and he had good



By Burton Holmes from Ewing Galloway

Fig. A. A view of the lower part of the city of Gorki (Nizhni Novgorod) and the Volga River, Russia.

reason to grumble. He lived in a poor house. Usually in the forest section it was a log house, or in the treeless area a sod house with a straw roof and a dirt floor. The peasant was usually a tenant, renting a few acres on the estate of some Russian nobleman, who spent most of his time in Leningrad and Paris and who took big rent from his tenants, giving them only enough to keep them alive. There were few schools, and, in 1913, three fourths of the people of European Russia could not read. In Asiatic Russia the proportion was greater.

THINGS TO THINK ABOUT AND TO DO

Speaking lines. 1. From the Appendix find the total area and population of U. S. S. R.; of Europe; of North America; of the United States.

2. Open your compasses a half inch for every million square miles in these areas, and draw circles to represent them.

3. Open your compasses a half inch for every 50 million people, and draw circles to represent the populations.

4. Write sentences telling what your two sets of circles show.

Speaking tables. 1. Study the U. S. S. R. line in the Appendix. Write a sentence for each of any five numbers in this line; for instance, "U. S. S. R. grows 22 bushels of grain a person, which is more than any other country in Europe except _____, and _____."

2. Study the Appendix, and list the Russian cities having more than 150,000 people. Are you surprised at the length of the list? Write a sentence telling why. Locate the cities and write a sentence telling where most of them are.

Blessings and handicaps. Write a list of Russia's resources; of reasons why she does not use her resources. (Hint: look over the paragraph headings in the text.) Read your answers aloud in class.

Give reasons. Give reasons for each of the following: 1. Why are not Russian rivers more useful?

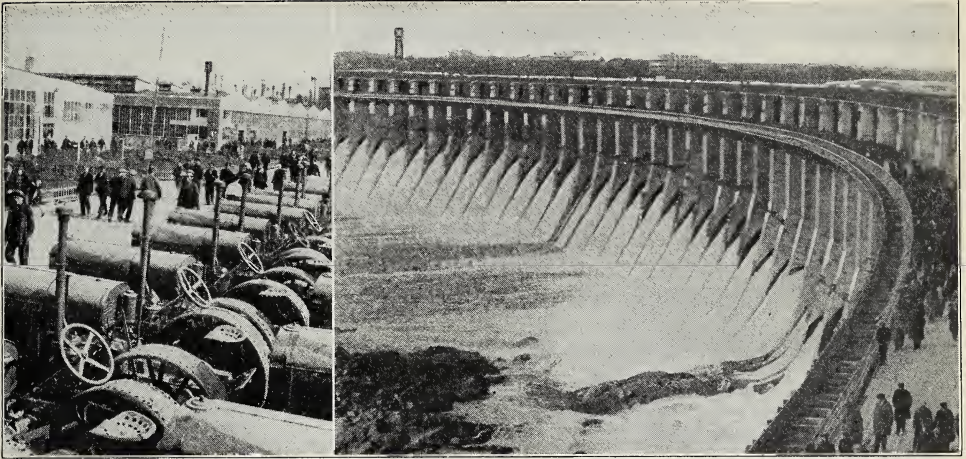
2. Why is there more travel in winter?

3. Why was a big railroad built through central Russia?

4. Why is manufacturing still done in the homes?

5. Why do most Russians live in the crowded west, rather than in the center, east, or south?

How many more good questions like these about U. S. S. R. can you write?



© Ewing Galloway

Figs. A-B. These pictures might be called, "The New Russia—a land of power and factories." At the left are tractors made in a tractor plant in Stalingrad. At the right is a glimpse of the huge dam at Dniepropetrovsk.

THE NEW RUSSIA

The revolution. After wishing for generations to get rid of the czar and his government, the Russians succeeded in the year 1917. The czar was driven away and killed. Most of the large estates of the landowners were divided and given to the people who lived on the land.

Since that time there have been several changes in government, and the government has great plans for making a new Russia. It is working as hard as it can to make changes. The first change is to make U. S. S. R. a nation of educated people. In a few years there has been a great reduction in illiteracy. It is probably true that no other people in the world have worked so hard to develop a system of education as have the Russians.

The next great plan is to change U. S. S. R. from a country that has been almost entirely agricultural to one whose people can live more comfortably with the aid of great manufacturing industries, like those of the United States, England, and Germany.

The power plant on the Dnieper. In

1932, the Russians completed the Dniepropetrovsk dam and power plant on the Dnieper River. An American engineer made the plan and superintended the construction. The dam is the largest masonry dam in the world. It raises the level of the water in the river 120 feet. Its cost was \$110,000,000.

The power plant beside the dam has nine turbine water wheels (built at Newport News, Virginia). Each wheel is attached to a generator that makes electricity. Five of the generators were made in Schenectady, New York, and four of them were made in the new Russian plant at Lenin-grad. Most of the machinery in the Lenin-grad plant was imported.

Each of the generators produces 84,000 horse power of electricity. Just remember that every water-wheel horse power runs night and day, and can do at least as much work as six flesh-and-blood horses can do. Then realize that it takes several acres of land to keep one horse, and that a man can work only a few horses. In this way you can get some idea of what the *Machine Age* means. Probably it would take, in



© Ewing Galloway

Fig. A. Halfway between Moskva and Vladivostok, 3,000 miles in either direction, is this Siberian city of Novo-Sibirsk. The picture was taken in winter at the edge of the city where the railroad crosses the Ob River.

U. S. S. R., 6,000 or 8,000 square miles of land to raise the food to keep horses and drivers to do the work that one of these nine 84,000-horse-power turbines can do if it runs night and day, as such wheels do.

The plan for this great enterprise provides that the Dniepropetrovsk plant will finally have 900,000 horse power. Niagara Falls has 430,000; Muscle Shoals, Alabama, has 610,000. The Dniepropetrovsk power plant is expected to send power by wire over an area of 70,000 square miles, and to supply the needs of 16,000,000 people. The dam will also provide water for irrigation to some dry areas on the steppe lands.

The industrial city near Dniepropetrovsk. At the same time they were building the power plant, the Russians were building a new city to shelter 100,000 people. The power plant, the city, and the new factories were erected at a cost of \$420,000,000.

The industries planned for the new Dniepropetrovsk city include a coke and chemical plant for making a variety of

chemicals and 1,400,000 tons of coke a year; electric furnaces that will smelt 20,000 tons of aluminum.

The dam backs the water up over a long area of rapids. Locks will lift ships up to this lake, and three other locks of 41 feet each will help to complete a shipway upon which the Russians are now at work, and which will allow larger vessels to pass from the Baltic to the Black Sea.

Other new industrial cities, with iron and steel works, chemical plants, and many other industries, are being built at Stalin-grad on the Volga, at Magnitogorsk in the Upper Ural Valley, and at Kuznetsk in central Siberia. The U. S. S. R. wants basic industries, such as iron, steel, machinery, and chemicals.

The people of U. S. S. R. are now boasting of their great success—thousands of young men trained as engineers, increased exports of textiles, exports of chemicals that had heretofore been imported, and a great increase in the production of machinery.



© Ewing Galloway

Fig. A. Looking across the Moskva River toward the Kremlin, Moskva. *Kremlin* in Russian means "fort." Within the walls of the citadel are the old palace of the Czars, several beautiful cathedrals, a monastery, a convent, an arsenal, and the Great Bell of Moskva, the largest in the world.

Moskva and other cities. Moskva, the capital, is a large city, with a number of other cities near it. Moskva was the capital of Russia before Peter the Great moved his capital to the seashore at Leningrad. Moskva is fairly centrally located with respect to the area of European Russia, and is in the northern part of the most densely populated region of the whole country. It is a great railroad center, and the products from manufacturing plants located here are within relatively easy reach of the majority of the Russian people.

Although the Russians are poor and do not have much money to spend, there is much manufacturing in Moskva and its vicinity, especially of clothes, shoes, and other goods of light character.

Leningrad is the center of the industries that require the most skill. Here, for example, are great airplane factories and a scientific institute for aviation.

Kiev, the third largest Russian city, has

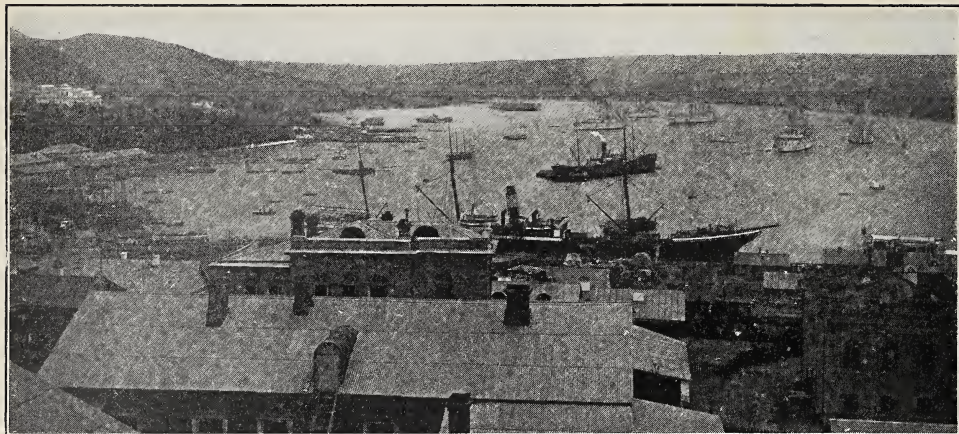
flour mills, sugar refineries, and tobacco factories.

Omsk, the metropolis of western Siberia, is a butter and grain center. Odessa, Vernoleninsk (Nicolaev), and Kherson, three cities of the south, are flour-milling centers. At Nizhni Novgorod, there has long been held a great fair each year, to which merchants come for great distances to buy and sell.

The new government. Since the World War, Russia has had a new kind of government; that called *U. S. S. R.* She is attempting to build an entirely new kind of civilization. We have not the necessary space to tell about that, but perhaps your teacher can find interesting material about *U. S. S. R.* in some of the many books and magazine articles that have been written about that changing country.

THINGS TO THINK ABOUT AND TO DO

Expressions to use. Use each of the following expressions in sentences: oppres-



By Burton Holmes from Ewing Galloway

Fig. A. The harbor and part of the city of Vladivostok, Siberia. This city is the eastern terminus of the Trans-Siberian Railroad and has steamer lines to Japan, Chosen, and Seattle.

sive aristocracy; landowners; large estates; without industries; crude plow and hand tools; Russian revolution; great plans; land was given to the people; great industries; belong to government; system of education; foreigners have been hired; Machine Age; farmed with tractors; government farms.

On your trade and products map.

1. Draw the triangle from Leningrad to Orenburg to Novorossiisk, where most of the people live.

2. Put initials for the cities of Moskva, Stalingrad, Magnitogorsk, Dniepropetrovsk, and Kuznetsk.

3. Under the map, list all the industries planned for the Dniepropetrovsk Power Plant.

CHAPTER SUMMARY

The Russian bear is big and clumsy. 1. So is U. S. S. R. Let every pupil try to find a different way to prove that U. S. S. R. is big. (Hints: read or copy sentences from the book; copy numbers from the Appendix; lay maps of other countries on the map of U. S. S. R.)

2. Next, let every pupil find a different fact to prove that size makes U. S. S. R. clumsy. (Hints: railroad mileage; length along rivers to sea; extent into Arctic, and into hot, dry lands; seacoasts along inclosed or frozen seas.)

Rich, but unhappy. 1. Write a sentence about each of the following riches: farm lands, forest lands, river transportation, minerals, ports, industrious people.

2. Write a sentence about each of the following reasons for unhappiness: climate,

waste lands, old government, new government; living conditions, education, industries.

Alphabet game. Divide the class into two groups. Let each group write on the board, in a column, the letters of the alphabet. Have each pupil in the groups write after an initial a Russian name beginning with that letter; as, A — Azov, etc. If he cannot think of a name, he may substitute an expression used in the chapter; as, F — farms divided; R — revolution (omit, U, X, and Z). Change sides, and this time have each pupil give a sentence using the name or expression.

EUROPE — GENERAL REVIEW

Reviewing the map of Europe. 1. Trace or draw free-hand an outline map of Europe. Show by heavy black line the location of these mountains:

| | | |
|----------|-------------------|--------------|
| Kiolen | Caucasus | Balkan |
| Alps | Apennines | Dinaric Alps |
| Pyrenees | Cantabrian | Carpathian |
| Vosges | the Pennine chain | |

2. Color faintly all the land that is less than 1200 feet above sea level.

3. Put on the map:

(a) The river that carries lumber and logs to Arkhangelsk.

(b) The river that carries lumber to Astrakhan.

(c) The river that carries wheat to the Sea of Azov.

(d) Two rivers that carry wheat to the Black Sea.

(e) Five rivers that carry the trade of France.

- (f) One river that carries the trade of many countries.
- (g) One river that is important to Czechoslovakia.
- (h) The short river that is used more than any other.
4. Add all the capitals of Europe. Mark with dot and initial.

5. Put on the name of every country by first and last letter (as "Fe" for France), or by initials (as I, F, S) if it has more than one name.

6. Make a list of the countries giving two important imports and one important export of each.

7. Show with dot and initial ten seaports on southern waters; six on British waters; twelve on western and northern shores of the continent.

8. Make on the map small graphs like Figure 181-A to show the temperatures in a place having oceanic climate, and in a place in nearly the same latitude having continental climate.

Reviewing the trade of Europe and her near neighbors. 1. In America there is a great trade between an industrial or manufacturing region and many raw material regions (Fig. 211-A). If you think Europe is the same way, what facts would you give to prove it?

2. Write a list of manufacturing countries of Europe, with a list of manufactures that are important in each. Do the same for raw material countries, and important raw materials exported by each.

3. You know that ships carry freight more cheaply than railroads. Look at Europe's peninsulas, seas, and gulfs, and then at the shape of North America. Tell which has the better shape for trade. Explain.

4. On an outline map of Europe and Her Near Neighbors, put:

(a) Routes for lumber ships from six lumber-exporting countries to some countries that import lumber. (Most countries with dense populations import lumber.)

(b) Routes of grain ships, oil ships, phosphate ships, early vegetable ships, butter ships (if one map gets too full, make another), coal ships, ships for carrying iron ore, cotton cloth, raw cotton, and heavy manufactures of steel.

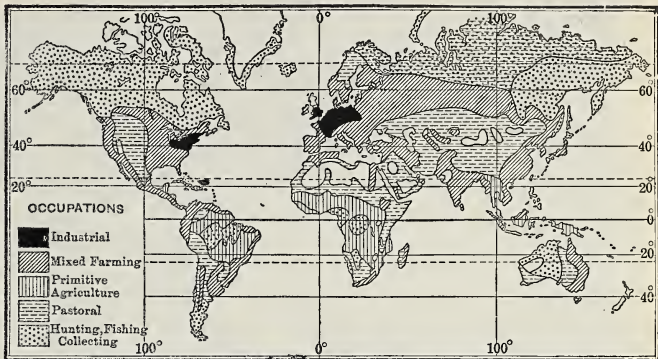


Fig. A. This map shows, in a general way, the occupations of men. Why are both the industrial regions in the same latitude? Find similar areas in other latitudes and try to explain each.

5. Point out how the fast mail and valuable express goes from London to Roma, Istanbul, and Moskva. Mark six important European railway centers by making little circles, one inside the other.

6. Would you say that Europe had two sets of routes? Explain.

7. Trace a map of Europe, Asia, and Africa. Mark on it the Suez Canal; the following British possessions: Gibraltar, Malta (near Sicily), Aden; the route of a date ship from Basra, Iraq, to Marseille and London; a ship carrying cotton cloth from Liverpool to India. Make a short talk about the usefulness of the Suez Canal.

8. Name and point out cities that would export and import the following: Persian rugs, carved wood, woodpulp, fine china, butter, figs, olive oil, cork, chemicals, gloves, fine machinery.

The present and future trade of my country. 1. Divide the class into teams. One team calls out the name of a country; the first member of the other team becomes a citizen of that country, points to his country on the map, and tells about its present trade and what he thinks it may become if it is likely to change.

2. Do you think the industries of all European countries will become alike, so that there will be no need to trade? State your reasons.

3. Look in the Statistical Appendix (Table I) at the column "Total Imports and Exports." Which countries have the largest foreign trade per capita? Are they mostly industrial or agricultural? Are the countries having the greatest foreign trade those that have the greatest natural resources?



Fig. A. A common sight in the crowded lands of Eastern and Southern Asia. Every scrap of land must be planted to crops, so hillsides are terraced with much labor. The Chinese farmer is harrowing his field before planting rice—the great food crop of Southeastern Asia.

EASTERN AND SOUTHERN ASIA CHINA

Someone has said that China is a land of problems. As you study this chapter, see whether this is true, and tell why it is or is not a land of problems.

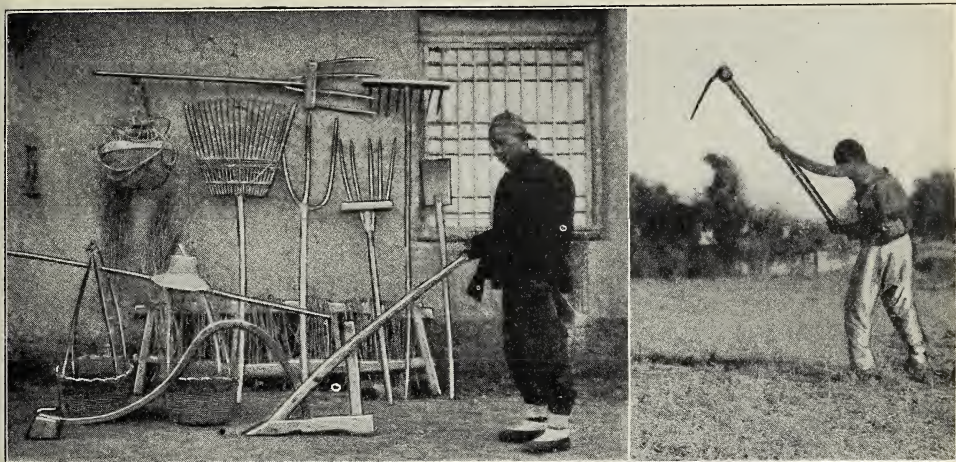
THE CHINESE FARMER AND THE FAMINE

The farm village and the farm home. One November day, I took a walk on the Great Plain of North China, about eighty miles south of Peiping. Accompanied by an American who lives in China and speaks Chinese, I walked through the street of a dusty village. On both sides of the street were brick walls ten feet high, without windows, and with only high, solid doors that opened into courtyards.

A farmer coming home from his land, went in at an open door. We introduced ourselves and followed him into the courtyard, commonly called *compound*. Here

stood his house and those of his two married sons. It is the custom in China for the married sons to live in the compound with their father's family. The compound also contained the barn for the mule, a pen with one pig in it, some ornamental plants, a small vegetable garden, a pit in which cabbage was buried to keep it from freezing, a pile of dead leaves and grass for fuel, and the stacks of the various crops from his little fields, which were a mile away. Three small children ran into the house when they saw strangers.

The farm tools. Our host brought some of his tools and let me take a picture of them and of himself (Fig. 213-A). He had made all the tools. At the right, by the window, is a wooden shovel, also a long-handled rake with wooden teeth, and three pitchforks, one of which was made by tying the branches of a growing tree so



Photos J. Russell Smith

Figs. A-B. My Chinese farmer host and some of his homemade tools. As you read the story, find each tool in the picture. At the right the Chinese farmer is breaking ground by use of a heavy hoe. Why doesn't he plow with a horse or an ox?

that they would grow in the shape the farmer desired.

Next is a big rake whose fine teeth are made of bamboo. The teeth of this rake had been steamed; and while the bamboo was soft, the teeth were bent near the ends so that they had claws almost like bent fingers. At the left of the picture is a basket and some rope made of straw. In the lower row, the long, wooden frame with sticks fastened to it, is a harrow used to crush the clods of earth as the mule drags it across the plowed field. At the end of the harrow are two short-handled brooms made of the branches of trees bound in bundles.

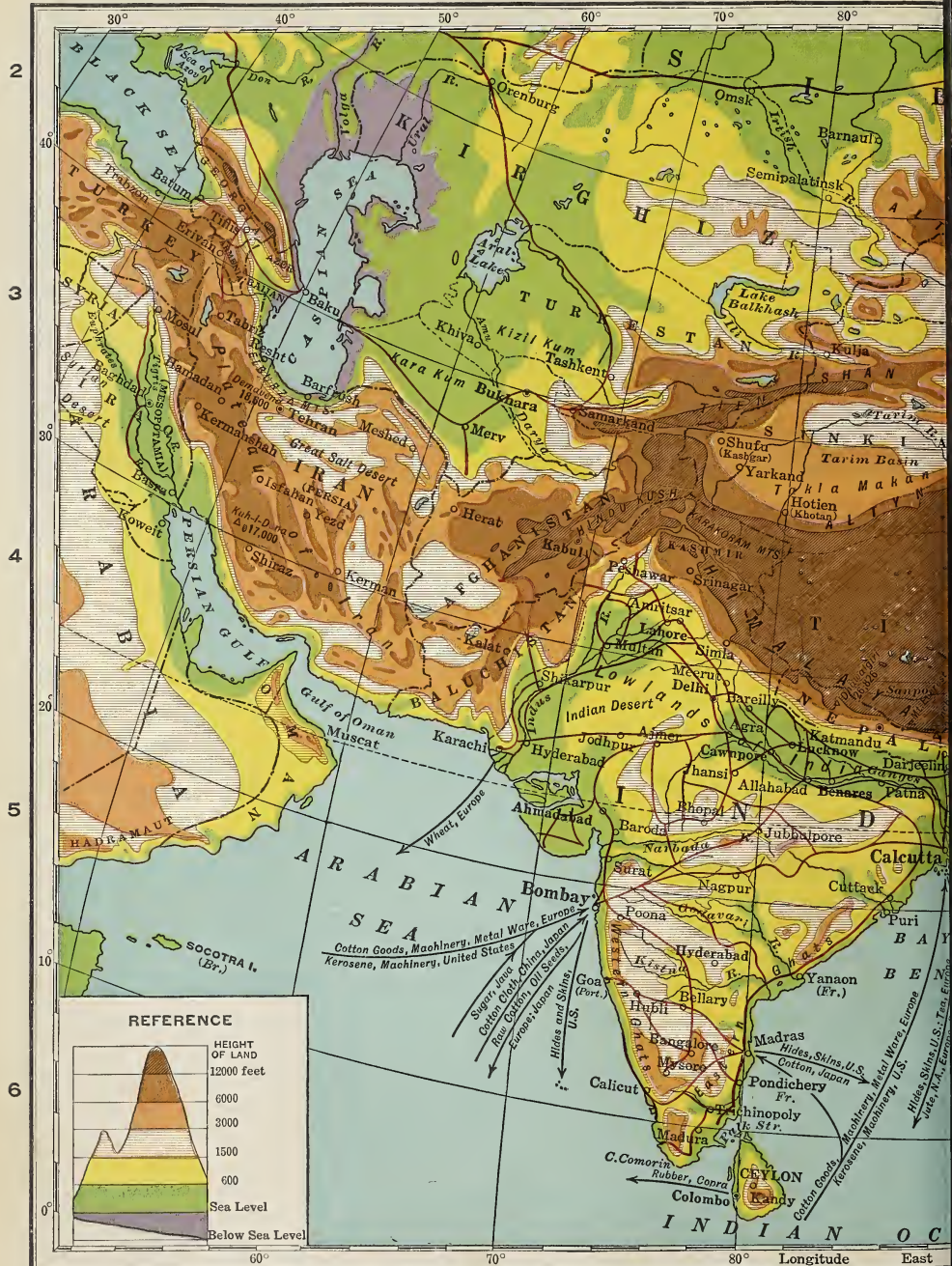
The three wooden pieces in the plow are fastened together with wooden pins; but the plow has a long, curved iron beam made by the blacksmith. Back of the plow are two homemade carrying baskets, and a homemade straw hat rests partly on the carrying pole (Fig. 213-A) and hangs over the top of the handle of one of the carrying baskets.

The farmer had a steel sickle and hoe

that I did not see, but, other than these, the only things in the picture that the man himself had not made are the paper (instead of glass) in the window, the precious iron beam in the plow, and the little bell hanging on the wall. He loves to hear this bell tinkle when fastened on the neck of his mule as it walks along the road or across the field.

Homemade shoes. The farmer wore shoes that his wife had made of cotton cloth. She spends days of work each year making shoes for the family. The tops she makes of new cotton cloth. For soles she uses pieces of old, worn-out garments; she sews many layers together until the sole becomes almost as thick and hard as sole leather. It is very hard work to sew the thick soles. All the clothes that the man wore were made of cotton from his own field.

The family that does not buy. Why did not the farmer buy an iron shovel, a better iron plow, other good tools, and leather shoes? These things were for sale in the store in the town three miles away. In



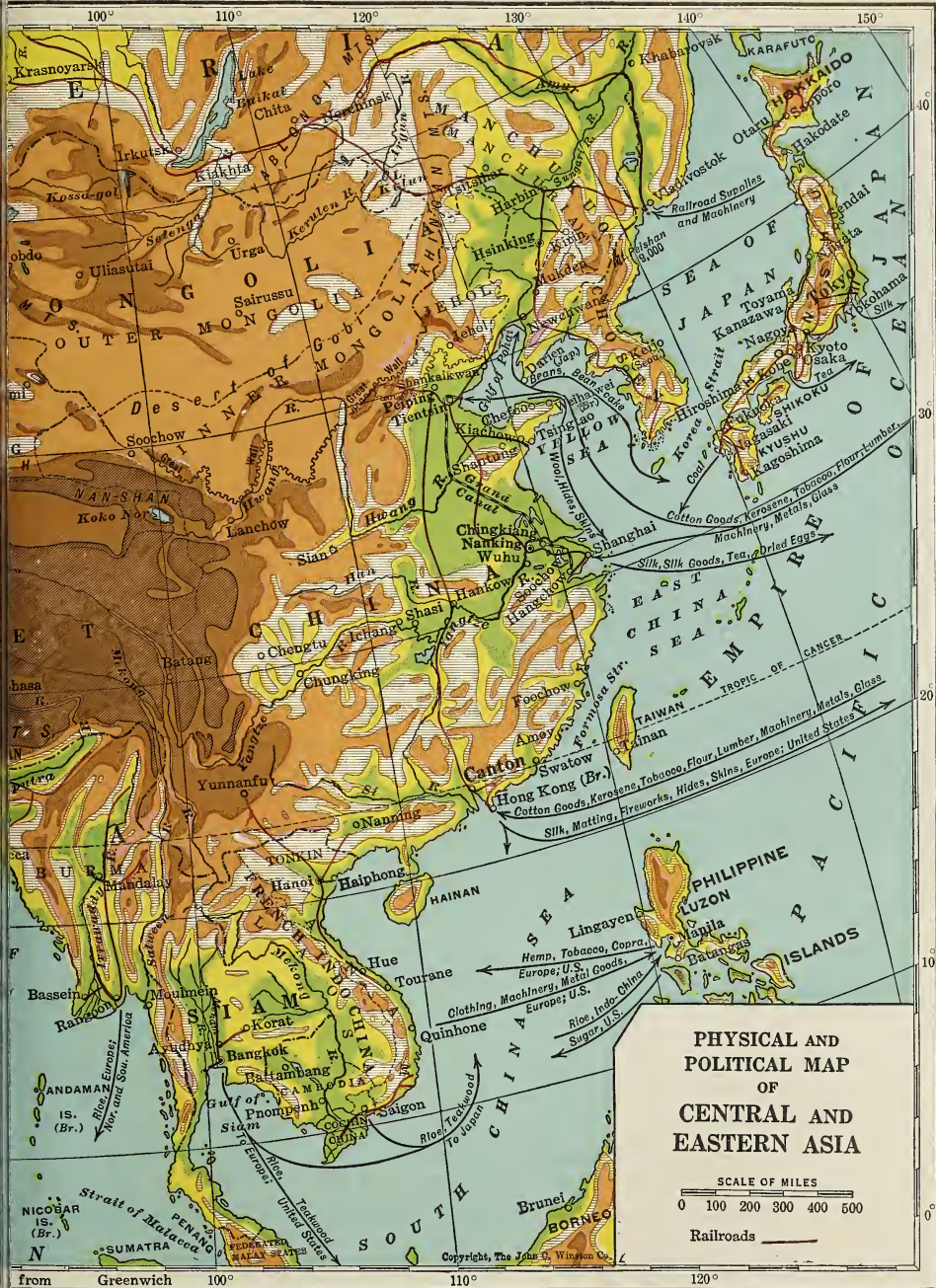


Fig. A



Photo J. Russell Smith

Fig. A. Three little Chinese girls scraping the roadside for leaves did not want me to take their pictures. Two of them ran away from the "evil eye" of the camera.



Photo J. Russell Smith

Fig. B. The little Chinese girl dressed in quilted cotton takes her umbrella to the umbrella mender.

order to buy, one must have money; to get money, the farmer would have to sell something. What could he sell? I looked around the courtyard where I saw all of his crops: (1) a small stack of soy beans with the beanstalks; (2) a few little heaps of corn drying beside the house, and a few shocks of fodder (the leaves and stalks of the corn); (3) a small stack of millet (*kaoliang*), a crop that we now grow in some parts of the United States, having obtained the seeds from China; (4) a few baskets of wheat, which had already been threshed out by hand; (5) a stack of

straw; (6) a few baskets of cotton, and a pile of cotton plants which had been very carefully brought in from the field. The family owned a few chickens, a mule, and one pig.

"What will you have to sell?" we asked.

"Nothing!" he replied. "By the time things grow again next year, my family, my mule, my pig, and my chickens will have eaten everything that can be eaten. I only hope we have enough. The cotton will be spun into yarn by some neighbors; we work on shares. My wife and daughter will weave it on the hand loom and make cloth for our clothing."

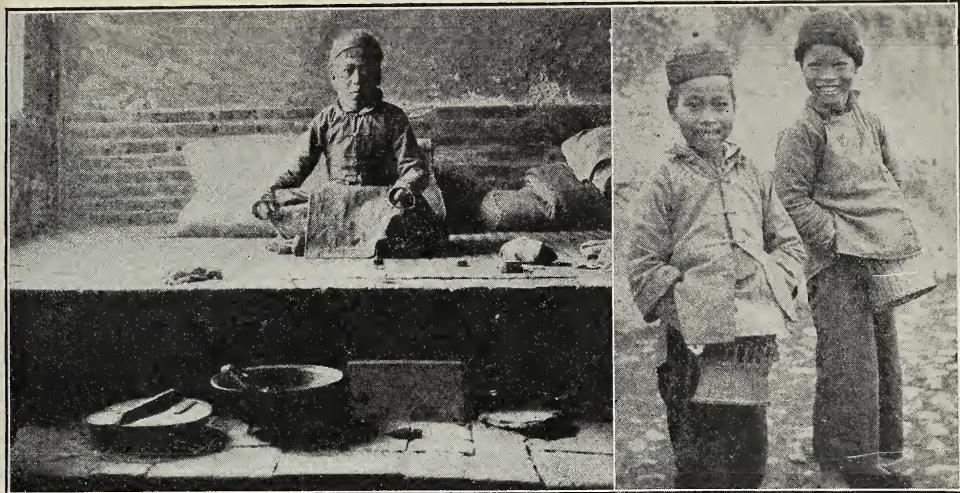
"How do you get money?" we asked.

"We are able to get a few days' work in the town three miles away, but we do not get much money."

Fuel. Just then I heard the whistle of a locomotive. Less than a mile distant was the great railroad that runs south from Peiping to Hankow. There were cars of coal on the railroad, but the farmer had no money with which to buy coal. Figure 213-A shows a rake with many small teeth set close together. With it the family rakes the roadside to gather fallen leaves and bits of dry grass, which they use for fuel (Fig. 216-A). The only fuel they get will be grass, leaves, cornstalks, sorghum stalks, cotton stalks — things the mule and pig cannot eat.

The family of our friend is like millions of other Chinese. They do not pretend to warm their *houses* in winter. They are lucky if they get enough fuel to cook the food, boil water for tea, and heat the kang a little (Fig. 217-A). Most of the people keep themselves warm by wearing thick clothing of quilted cotton (Fig. 216-B).

Famine. Shortly before I visited this part of China, there had been a New Year when many farmers had no pig because



Photos J. Russell Smith and Am. Bd. Foreign Missions

Fig. A. Two methods of keeping warm in China. The boy at the left is seated on a *kang*. The two lads at the right have fire baskets, a little charcoal fire in an earthen pot in a wicker basket.

there was nothing for the pigs and little for men to eat.

The famine came because, for two seasons, no rains had fallen in October and November. The farmers of northern China have a two-crop system. In summer they plant corn, kaoliang, soy beans, and cotton. These crops are harvested at the end of summer, and in their place winter wheat is sown in September and October, harvested in May or June, and the land again quickly planted to summer crops. If one or two good rains come in October and November, the wheat begins to grow. A few light winter snows moisten the earth enough to let the wheat make a crop. But if the rains of October and November fail for two years in succession, the people miss two wheat crops, and famine comes. This is because there are so many people and the farms are so small that there is not enough food for the people, unless they get a winter crop as well as a summer crop. Therefore we say "China is an overpopulated country."

A nation of village farmers. China has

hundreds of thousands of villages like the one I visited. About four fifths of the people of this most populous nation in the world live in such farm villages. Of course, different crops are grown in different parts of the country, as we shall soon see.

THINGS TO THINK ABOUT AND TO DO

Making sentences. Use each of the following expressions in a sentence about China: compound, bamboo, carrying pole, carrying baskets, soy beans, kaoliang, hand loom, sorghum stalks, kang, overpopulated, uncertain rains, famine land, two-crop system.

Eleven columns to fill. 1. The headings of the columns are: building materials, tools, food, animals, clothes, crops, work of men, work of women, fodder, fuel, pleasures. In each column write short expressions about China, to describe the headings. See who can make the longest lists.

2. Fill in the same eleven columns to show how much more comfortably farmers can live in the United States.

Try to do as they do. Try to make some of the things that the Chinese farmers make: clay house, wooden shovel, wooden rake, pitchfork, straw rope, wooden harrow, broom. By putting the work of the class together, you may be able to show the compound of a Chinese farm home.



Fig. A. From this map would you say that China is larger or smaller than the United States? On the United States map locate the place where you live. What is the corresponding area in China called? Manchukuo is now an independent country with its own government, but China still claims this rich land.

A LARGE, ISOLATED COUNTRY

The size of China. After you have read the paragraph below, answer this question: Why is it important to know the quality of the land as well as the size of a country?

Find places on or near the coast of North America having the same latitude as the three great Chinese cities, Peiping, Shanghai, and Hong Kong. Measure the distance (Fig. 215-A) from Shanghai to Kashgar in the western part of Sinkiang, and measure the same distance westward from New York. Also measure the distance from Hong Kong north to the Amur River. See where the same distance would bring you if you started at New Orleans and went northward.

The maps of China. Examine closely the rainfall map of Asia (Fig. 56-A). What does it tell you about the western part of the Chinese possessions shown on Figure 3-A? Examine Figure 7-A. You already know that land with less than ten inches of rainfall is desert, and that most land with less than

twenty inches of rainfall is poor or uncertain for farming. Make a table to show the area, population, and population per square mile of the United States, China, Tibet, Sinkiang, Inner Mongolia, Outer Mongolia, and Manchukuo (Manchuria). Tell some of the things you learn from this table. What relations do you see between rainfall and your population table? What is one answer to the question at the beginning of this chapter?

China and the dependencies.

We must be careful to remember the difference between China and her dependencies. The dependencies of China are Tibet, Sinkiang, Outer Mongolia, Inner Mongolia, and Manchukuo (which she still claims). China—or *China Proper*, as it is often called—is only about half as large as the United States, but how many people has it?

Tibet. What does Figure 214-A tell you about the elevation of Tibet? What mountains bound it on the south? You will know that Tibet is a very hard country to reach when you remember that Pikes Peak, in Colorado, is 14,000 feet high, and that one can get to Tibet only by climbing through passes 16,000 to 18,000 feet high, on the *south*, *east*, or *north*. Tibet is the highest plateau in the world, walled in by the highest mountain range in the world. The mountains shut off most of the rain-bearing winds which come from the south and southeast; so this cold plateau is also dry and treeless, with many snowy mountains to be seen.

Some of the land is only bare gravel, and some has scanty pasture where nomad shepherds follow flocks and cook their food by burning dry dung. This is the home of the yak, an oxlike animal having



Fig. A. Native woman going to market at the city of Lhasa on the cold and dreary plateau of Tibet.



Fig. B. A European traveler and his guide on the high plateau of Tibet, near the Chinese border. The faithful beasts of burden are yaks. They provide the Tibetans with hair for tents and clothing and with milk and meat.

long hair on his stomach, that keeps him warm when he lies down on the snow. In some valleys are villages of a few houses. Here the farmers irrigate crops of barley, peas, and radishes.

Lhasa, the capital, has only 20,000 people. Because it is the home of the Grand Lama, the highest priest of the Buddhist religion, many Buddhists come to Lhasa on pilgrimages.

Because it is so difficult to reach Tibet, the people have been able to keep foreigners out of the country most of the time. While the Chinese claim it is a part of their country, the Tibetans say that they are independent. At the present time, the Chinese government is so weak that it has very little to do with Tibet. The British are trying to establish a protectorate over Tibet.

Sinkiang. What does Figure 214-A tell you about the elevation and the slope of land in Sinkiang? What does Figure 56-A tell you about the land through which the Tarim River flows? Where does the Tarim River end? Do you

think it carries a great amount of water? Some of the time the Tarim River does not run at all. Sometimes, when the snow melts on the mountains, the water runs down to the lake or swamp, and there it ends.

Most of Sinkiang is a desert, with a string of fertile oases around its edges. The oases are found where streams come down from the Tien Shan (mountains) on the north, and the Altyn Tagh and Karakoram mountains on the south.

Mongolia. The vast plains of Inner and Outer Mongolia are a region of little rain, the home of nomads (page 9). Really, one can scarcely tell who owns part of this area. The Chinese have had it for centuries, but of late the Russians and Japanese have been trying to get parts of it. Within the last few years, many Chinese farmers have settled in the edge of Mongolia.

Manchuria. We shall read about Manchuria (or Manchukuo) on page 242.

Natural barriers. It is uncertain whether we may call Tibet, Sinkiang,

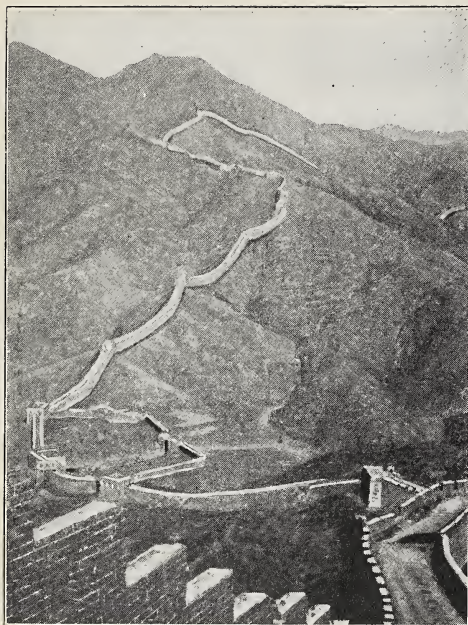


Photo J. Russell Smith

Fig. A. A part of the Great Wall of China. In the valley is an old fort.

Mongolia, and Manchuria parts of China. It is certain, however, that these lands, being hard to cross, have been natural barriers which kept people from getting into China from the west. China has other barriers on the south. Look at the rivers of eastern Tibet; see how they run south. They have sharp valleys with very high mountains between. In winter, the mountains are covered with snow; in summer, the rivers are rushing with flood. Such country is most difficult to cross. China has been wonderfully protected by Nature on the west and the south. On the east, she has the wide Pacific Ocean.

The Great Wall of China. Only in the north could large bodies of people, with horses, flocks, and herds, cross into China. There, 2,000 years ago, the Chinese built the Great Wall to keep out invaders (page 11). You will enjoy reading about

the Great Wall in an encyclopedia. Four times, nomad conquerors entered China by this northern route, but they could not seriously disturb the Chinese farmer nation. The conquerors collected taxes for a few generations, married with the Chinese, and finally became a part of the nation.

The important part of China for our study is China Proper, the eighteen provinces within the Great Wall, the part where nearly all the people live.

THINGS TO THINK ABOUT AND TO DO

Begin a to-be-continued map of China.

1. On a blank map of Asia or a traced outline map, show the boundaries of China Proper, the Yellow River, and the Great Wall.
2. Put a dot and initial in proper position for Peiping, Shanghai, Hong Kong.
3. Draw China's most northern and most southern parallels.
4. Write names and mark the boundaries of China's dependencies.
5. Draw in black the Amur and Tarim rivers.
6. Show by symbols (→→→→→→) and by name the Himalaya, Tien Shan, Altyn Tagh, and Karakoram mountains.
7. Draw short arrows from the south and southwest to show the winds that reach the Himalayas.

Explain. Except at the edge of Mongolia near the Great Wall, there is no good highway or railroad in Tibet, Sinkiang, or Mongolia. What does this tell you about the life of the people or their trade? What difference would a railroad make?

"No admittance, even on business." This would be a good motto for old China Proper.

1. How were strangers kept out on the north? south? east? west?
2. How did caravans come in?
3. Why were ancient nomad tribes satisfied to settle in China Proper?

WHY questions. Make as long a list as you can of good "why" questions—things to explain about China and living in China. Be sure you can answer each question yourself.

CHINESE CULTURE AND CHINESE INDUSTRY

Self-sufficient civilization. Chinese civilization has lasted a long time, partly because barriers afforded protection. The Chinese did not need to trade with foreigners, because they had a variety of resources at home. In the year 1820, an English writer complained that the British ships could take nothing from England to China that the Chinese did not have already. They had wool, cotton, silk, oak, pine, and bamboo, and many other things besides. China reaches from Peiping, in the latitude of wheat and corn, to Hong Kong, in the land of oranges, bananas, and sugar cane. Long ago, coal and iron were found in several places in China. In the west are mountains rich in minerals, and the nomad's country that exports wool and hides. I have seen hide-laden oxcarts in trains half a mile long, bumping down from Mongolia into China.

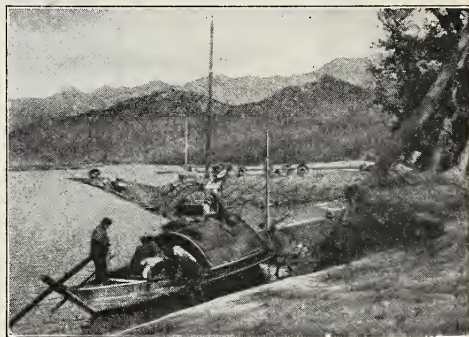
The different parts of China still trade with one another by means of junks (sailing vessels) that go up and down the coast; by boats on many canals and rivers; and by caravans of men and animals that cross deserts, high mountains, and swift streams.

Books and education. The Chinese have had books and writing for a very long time, although only a small part of the people were educated. They invented printing long before it was known in Europe. They have had educated men, philosophers, and writers so very long that a wise man named Confucius, born about 550 B. C., spent his life gathering up the wisdom of the philosophers who had died long before he was born.

The Chinese have followed the teachings of Confucius for more than two thousand years. For many centuries, every little boy who went to school



Fig. A. One common method of transportation and trade in China is by junks (sailing vessels).



Photos J. Russell Smith

Fig. B. Some years ago, I made a trip down the Min River on the houseboat which you see in the picture. Millions of Chinese have no other homes than boats like my houseboat.

learned hundreds of pages of the writings of Confucius, of Lao-Tse, and of other wise men. These rules of good conduct were the chief education of millions of Chinese for centuries. They told much about the *person* and the *family*, but little about the nation.

Chinese writing began before the alphabet was invented. The alphabet, you know, was a great invention. With its twenty-odd letters, you can make 100,000 words. The Chinese happened to start with *picture writing*. The Chinese word for *contentment* is a little drawing of a man and a straight line for land or field. *Hotel* is the sign for 100, the sign for man, and, above, the sign for roof. *Gossip* is



FROM YOUNG FU OF THE UPPER YANGTZE

Fig. A. Wang Scholar teaches Young Fu to write Chinese characters. "He took a brush pen, moistened it, rolled the hairs into a fine point on the slab of ink, and wrote."

three women at a well. For each word, there is a drawing, or *character*, as it is called. If you were in a Chinese school, you would learn several *thousand* characters. No wonder the Chinese have developed marvelous memories, but they require about two more years to reach a certain point in their system of education than is required when an alphabet is used.

Think of the task of learning to write thousands of *different* word characters, and of the skill required to write them so accurately that they can be read! In China, writing is done with a fine brush and it has always been considered a fine art.

In the year 1925, I was told in Peiping (then Peking) that high officials in the

Chinese Government practiced making characters each day, so that they might write beautifully; and that in doing this they copied the wise sayings of the philosophers, because it is a fine thing to think high thoughts.

By long practice, the Chinese have become a nation of very skilful workers. Their carvings in wood, stone, and ivory, their work in lacquer and metal, show great skill and great patience.

The size of the farm. The Iowa farmer has more than 150 acres of land. Such a farmer has horses, tractor, reaper, and other machinery. Each year the farmer raises thousands of bushels of grain. This is enough to give each member of his family the four or five bushels of grain that a person needs for food in a year, and wagonloads besides — some to send to distant markets, and also enough to feed many horses, cattle, and pigs. In *China*, one third of the landowners have less than two acres. Two thirds have less than five acres. Now you see why they grow two crops a year, instead of one crop a year, as the Iowa farmer does.

You may wonder why the farms in China are not larger. The Chinese land has been divided among children, grandchildren, and great-grandchildren until there is only a little land for each family. For this reason, nearly everyone must work hard for a living. Even the children work. They work long hours and begin work when very young (Fig. 216-A).

Few animals. If a family must make its living on two acres, none of the land can be in pasture, because the yield from pasture is too small.

Therefore the farmer in China can have but few animals. Most farmers, like the one I visited, have some chickens, a pig that eats scraps which no other animal will eat, and sometimes a cow that pulls



Fig. A. The Chinese farmer in the picture is carrying fertilizer to his "farm"—and most of the "farm" shows in the picture.

the cart and the plow and lives on straw and beanstalks. Many of the farms are too small to support a work animal. The farmer must use the spade and the hoe instead of the plow to prepare the ground for crops. A family can cultivate only two or three acres with the hoe and spade. Though the land yields two or even more crops a year, there are millions who have nothing to sell, because the family must eat everything that is eatable. The farmer uses the rest for fuel—even then the house is freezing cold in winter.

THINGS TO THINK ABOUT AND TO DO

Find words that mean: 1. A picture that is a word.

2. A person who thinks noble thoughts.
3. Two philosophers of old China.
4. Chinese coast and river boats.
5. Trains of men and animals carrying goods.
6. Chinese invention that we all use.

Find reasons: 1. Why Chinese could live isolated from the world.

2. Why their writing is hard to learn.
3. Why their farms are so small.
4. Why Chinese farmers work so hard.
5. Why Chinese are skilful workers.
6. Why pigs, cows, and chickens are their principal farm animals.
7. Why Mongolian oxcarts carry hides and skins.
8. Why farming methods on small farms differ from those on large farms.



Photos J. Russell Smith

Fig. B. Near by is another small Chinese farm. The farmer's wife is carrying water from a stream to the crops.

NORTH CHINA

The map of China. See Figures 3-A and 214-A and make a large free-hand map of China Proper. Put on it the Great Wall, the Hwang, Yangtze, Han, and Si rivers. Color all the lands that is below 600 feet in elevation; all that is above 3,000 feet in elevation. Build up this map as you read about the parts of China.

A great fertile plain. The eastern part of the Hwang Valley and the low plain near Peiping make a very flat and fertile plain. It was here that I visited the farmer who made his own tools (page 212).

Had I walked for days to the eastward or for many days to the southward from the city of Peiping to the Hwang River and beyond, everywhere I would have walked only on flat land, with never a hill to be seen except the burial mounds that mark the graves. The soil is soft, with never a stone, because the whole plain was built up by fine particles of earth that the rivers had brought down from the highlands to the westward.

The plain of North China is one of the great agricultural regions of the world. As I looked across its level expanse, I could see villages in all directions—villages—villages—villages. The houses

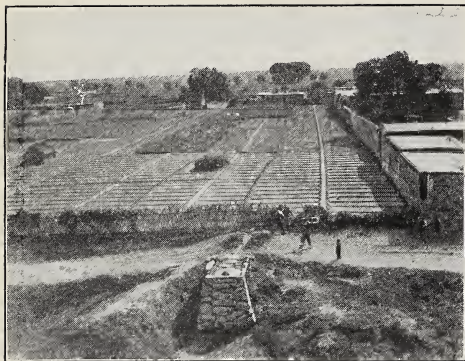


Photo J. Russell Smith.

Fig. A. A garden planted to cabbage in the flat plain of North China. Men carry water for the garden from the stone-walled well.



Photo J. Russell Smith.

Fig. B. Villages, villages, villages—all made of clay houses with peaked roofs of flat tile in the plain of North China.

were built of the clay of the plain burned into bricks; the roofs were of straw, or of clay burned into flat roofing tiles (Fig. 224-B).

The plateau of wind-blown earth. On Figure 214-A find the place on the Grand Canal that is 200 miles south of Peiping. What is the elevation of the land in the province of Shansi, 200 miles to the west of this point? This plateau west of the Great Plain of North China and north of the Han River has a wonderful soil called *loess*. This soil was made of dust blown from the deserts of Mongolia and Sinkiang by the west and northwest winds of the

Chinese winter. All North China has disagreeable dust storms several times each winter. During a dust storm, lamps must be lighted in midday. The dust creeps into the houses and covers everything.

For ages the dust has been falling on the land, until in some places it is hundreds of feet deep. The soil is yellow; the waters of the streams washing the soil are yellow; the muddy water of the rivers makes the sea yellow for miles and miles from the shore. For this reason, the Yellow Sea was so named.

The Hwang River, cutting through the loess plateau, gathers much mud in its waters. When the river reaches the flat plain, the mud settles to the bottom and fills up the river. To keep the river from overflowing, the people shovel out the mud and with it build dikes along the river. Sometimes, in great floods, the river breaks these dikes and flows down upon the plain, drowning tens of thousands. Do you see why the river is often called *China's sorrow*?

Loess is a splendid soil for agriculture; it is rich from top to bottom. The farmer can plow it, and even if the top soil blows away or washes away, the part that remains is as good as the part that was lost. Loess soil is soft and easy to plow, and it holds most of the water that falls upon it.

The house underground. This region is nearly treeless, but the earth itself serves as material for houses. The people dig cavelike dwellings in the sides of steep banks. Millions live in these houses. I have passed village after village, seeing only house doors and stable doors side by side (Fig. 225-A). Wherever water runs, the loess for some reason washes in such a way that straight up-and-down banks are left. This makes travel difficult, but gives many steep banks in which people



Photo J. Russell Smith

Fig. A. This picture illustrates "The house underground" about which you read on pages 224-225. Read the paragraph, then tell about the picture.

may dig to make house and barn. The loess house is dark, but it is warm in winter and cool in summer.

Famine from drought. The loess country has one great trouble: the rainfall is light, and, worse still, it is uncertain. Sometimes droughts are so severe that famines follow. This has happened every few years for many centuries. Again and again, thousands of people have starved to death here. Sometimes millions have starved to death, and the population is not nearly so dense as it would be if the land had a regular rainfall, like that of New York State.

Tientsin and Peiping. Tientsin is the chief port of North China. Find the end of the railroad that extends from Tientsin to Peiping on to the northwestward. Over how large a territory do you think Tientsin draws trade?

Peiping, long known as Peking (northern capital), is a large city, surrounded by a high wall, as are so many Chinese cities. Peiping has lost many people since the capital was moved to Nanking (southern capital) in 1928, but it has many beau-

tiful buildings that were built in the days when it was the capital of a strong empire. It is visited each year by many Americans and travelers from other countries.

THINGS TO THINK ABOUT AND TO DO

Add to your map: The Grand Canal; the Han River; the railroad from Tientsin to Mongolia; Nanking; loess plateau; draw arrows from the northwest to show the winter winds of Mongolia. Keep a symbol key.

The good earth. 1. Give reasons why the Chinese value their loess soils.

2. If the soil is good, why are there famines?

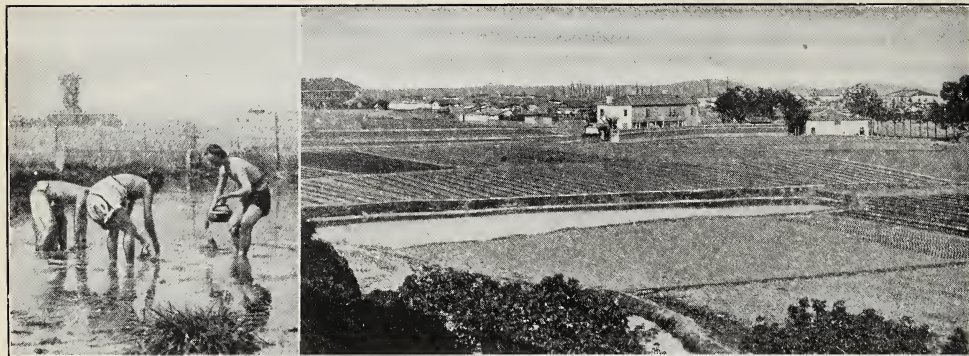
3. If the land is flat, why is it hard to travel?

4. Find some earth which you think is like that which makes the plains of North China.

Freight talks. In a warehouse beside a ship at Tientsin, I saw sheepskins, goat-skins, deerskins, cowhides, and sacks of horsehair and carpet wool. I also saw boxes of sewing machines, phonographs, knives, alarm clocks, medicines, lamps, and many boxes each containing a can of kerosene.

Take the part of any one of these articles and tell of its experiences or prospects.

Modeling. Make a model of a section of the Hwang River to explain floods.



Photos Brown Bros.

Figs. A-B. Growing rice on the flat, well-watered lands of the Yangtze plain.

THE YANGTZE VALLEY — CENTRAL CHINA

The river that builds and feeds and kills. Like the Hwang, the Yangtze carries much mud, and has turned the sea into a low plain—tens of thousands of square miles in extent. This making of new land goes on so fast that towns that were once seaports are now thirty miles inland, and the land in the Yangtze delta is advancing a mile in sixty-nine years.

The streams carry material to some places faster than to other places; therefore the unfilled places are large, shallow lakes. Other parts are so low that they are marshes most of the time. Wide areas are so flat that if a flood rises a few feet, it makes a temporary lake for miles and miles.

The monsoon. Now, it so happens that the chief rainfall of China comes in summer. In winter, the wind blows from the land most of the time, and there is little rain. In summer, it blows from the sea most of the time, and there is much rain in the lands near the sea (Fig. 56-A). Such climate is called *monsoon climate*. This is fine for making crops, but the Yangtze, like the Hwang and other rivers, rises in great floods and often overflows. The people have worked for centuries

building high banks to keep back the river, but sometimes the rains are very heavy and the river banks break. Then, hundreds and even thousands of square miles of densely peopled farmlands are flooded and crops are spoiled. Sometimes people are drowned, but more often they starve because their crops are drowned.

The Grand Canal. One of the great achievements of China is the Grand Canal, built long ago to connect Peiping with the Yangtze and supply the capital city with food.

Rice—a crop that grows in a pond. The plain of the Lower Yangtze is a land of rice, the great summer crop of the warm lowlands of central and southern China. Here each summer tens of millions of men and women, boys and girls, work hard in the millions of little rice fields.

It takes a great deal of labor to grow rice as it is grown in the Far East. Rice is a swamp plant. To make rice feel at home and grow abundantly, the people turn their fields into ponds. To do this, they make the land as level as a floor, so that the water may be at the same depth in all parts. They then make a bank of earth about a foot high all around the field. The bank of earth keeps water



© Ewing Galloway

Fig. A. The Grand Canal—probably the greatest inland waterway made by man in the world. The canal extends about 700 miles from Hangchow to Tientsin. The birds are cormorants. They dive into the water and catch fish for their masters. About their necks are bands to prevent them from swallowing the fish.

from running off the valuable rice fields.

To bring water to the rice fields, and also to drain them, canals cross the low plain in every direction, as roads cross the farmlands of the United States. Sometimes the water will run from the canal or stream into the rice fields. But if this is not possible, the people must get water there by pump or treadmill, or even by lifting it in buckets. In summer, many thousand square miles of China really become a shallow inland sea—a kind of checkerboard sea.

The harvest and the winter crop. When the rice is ripe, the water is drawn off and the ground is allowed to dry. The grain is cut with a sickle, set up on sticks to dry, and threshed by hand. Much of the ground is at once spaded, and the crop of winter wheat or barley is planted for the harvest of May or June.

Food. The chief food of the people of central and southern China is rice, beans, a little vegetable oil, and a surprisingly large amount of cabbage and other boiled

greens, of which the Chinese have many varieties that we do not use. Long ago, they learned that greens are very wholesome. In place of butter, they eat vegetable oil made from soy beans or the seed of rape, which is a kind of cabbage. These vegetables give much more edible fat to the acre than does the cow with her milk and butter, or the pig with his bacon.

The Chinese eat great quantities of vegetables. The sweet potato, native of South America, was introduced from the Philippines, and is now much used in China. The peanut, which came to China from the United States, is also very popular.

Many of the Chinese and Japanese who have come to America grow vegetables. They are the finest gardeners in the world.

Trade and industry on the Yangtze. Nearly all the foreign trade of Szechwan and the lower Yangtze Valley goes by boat to Shanghai. It is carried by many



Fig. A. The Bund or waterfront at Shanghai, China. Locate this city in Figure 214-A. After you have read this page, tell which of the "two cities" you think the picture shows.

kinds of native boats and many foreign steamboats. The great port of Shanghai has more people living back of it than has any other port in the world. Shanghai is really two cities. One part, called the *International Settlement*, is built on land leased to foreign governments. It is really a European city in appearance and in its government, although most of its people are Chinese. Here are many cotton mills, silk mills, flour mills, and shipyards, owned by Europeans, run in the European way, but employing Chinese workmen. Immediately alongside, is a large Chinese city, built, owned, and governed by the Chinese. It seems that you have made a long journey when you cross the street from one of these cities to the other.

It is not far from Shanghai to the old Chinese cities of Hangchow and Soochow. Here one may see many beautiful old Chinese buildings, and industries that are centuries old.

A branch of the Yangtze River, the Han,

has boats on it for hundreds of miles. Can you tell why there are three cities at the place where the Han meets the Yangtze? There are almost as many people living in cities at the mouth of the Han as live in and around Philadelphia. There are coal fields and iron mines near by, and on the banks of the Yangtze there are modern iron works, and plants for refining antimony and tungsten from Chinese mines. There are also thousands of small Chinese factories, where work is done by hand as in the time of Confucius.

This Yangtze Valley, with its river highway with many cities on its bank, may some day become one of the great industrial regions of the world.

THINGS TO THINK ABOUT AND TO DO

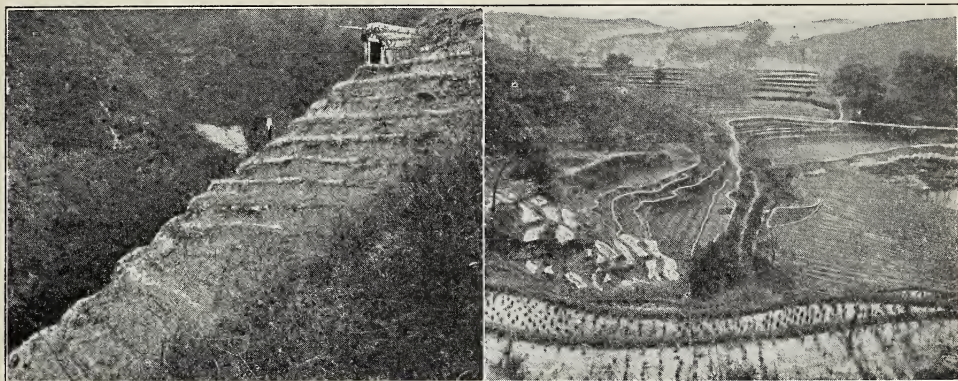
Add to your map: 1. Trace the Yangtze in black.

2. Place four cities on or near this river.

3. Place two old cities back of Shanghai.

4. Show the gorge of the upper Yangtze. Continue to keep a key of symbols.

Tell the story of rice. 1. Tell the story by writing one or two sentences about each



Photos J. Russell Smith

Figs. A-B. Rice and sweet potatoes in South China. On the lower slopes where plenty of water can be had, rice is grown on hillside terraces as you see in the picture at the right. Higher up, the terraced hillsides are planted with sweet potatoes as in the picture at the left. How do these two pictures tell you that China is a crowded country?

of the following topics: leveling the field, building the bank, flooding the fields, fertilizing, weeding, harvesting, threshing, planting.

2. Underline once, parts of your story which tell that the Chinese are thrifty; underline twice, parts that tell that Chinese farmers work hard.

Vegetables for strength. List the vegetables that feed the hard-working Chinese. Underline the ones that are new to you.

Riddles: Answer in one or two words:

1. A swamp plant.
2. A river carrying yellow mud.
3. A wet famine land.
4. A dry famine land.
5. Farmland with steady water supply.
6. A European port.
7. Province of upper Yangtze.
8. A branch of the Yangtze.
9. A city where two rivers meet.
10. Two cities with old Chinese culture.
11. The rainy season in Yangtze Valley.
12. A city that is two cities.

Work that is play. 1. Perhaps you or your teacher can arrange to get some sprays of rice. From what countries or parts of the world could samples of the rice plant be obtained? Can rice be grown in your state?

2. Try to cultivate a small field as the Chinese do. Thresh some of the grains by hand.

3. Make a shoe, a hat, a coat, or rope with the straw.

4. Find pictures of these things in other books.

SOUTH CHINA

The southeastern mountains. China's mountains cover much more of her surface than do her plains. Nearly all of South China is mountainous. Its coast is high and rocky, and is indented by many bays. Here many people are fishermen, and some are pirates.

This is a land of heavy rain. The mountains are forested and the valleys are filled with rice paddies wherever the Chinese can find room. Rice terraces are often built on mountain sides. Mountain sides to which water will not flow to make paddies are often terraced and planted to sweet potatoes, vegetables, tea plantations, and mulberry trees to feed silkworms. This part of China exports fine tea; thousands of little villages far up the valley grow their own food and get what money they have by sending tea down to the coast. Others get their money by sending rafts of logs down the rivers; the logs are sent up the coast to treeless North China.

The southwestern mountains. In Yunnan, the southwestern province of China, are many tin and copper mines worked by



Fig. A. Hong Kong consists of an island on which the city of Victoria is located (lower half of picture) and the peninsula of Kowloon (upper part of picture). The picture was taken from a high, steep hill back of the city.

native methods. This part of China is very mountainous and is very little known.

The valley of the Si (West River). This valley is a land of rice, oranges, and many tropical and subtropical fruits. Note the latitude of this valley on Figure 214-A. Because of the warm climate here, crops may be grown at all seasons of the year; two crops of rice a year are generally grown. One crop is planted in March and harvested in July; the other is planted in August and harvested in December. During the rest of the year, other crops, such as grain, cabbage, beans, or ginger, are sometimes grown on the same land. It takes a great deal of planning, a great deal of work and of fertilizer, to get so much produce from one's land.

The Si Valley, like the lower Yangtze, is one of the most densely peopled parts of China. The city of Canton, at the head of the delta of this river, cannot be reached by large steamers, but the city has a million people. It is famous for being very crowded and for exporting fine

silk. About 40,000 houseboats, tied together in rows, are the homes of many thousands of its people.

Hong Kong. There is lively trade between Canton and the Si Kiang Valley and Hong Kong, the chief seaport of South China. The British secured the island of Hong Kong in 1841. It is now one of the great ports of the world. Nearly all vessels going along the coast of Asia stop there, but Hong Kong does not have the future possibilities of Shanghai. This is because the Shanghai region has so much more farmland.

THINGS TO THINK ABOUT AND TO DO

Add to your map: coloring to show mountains of South China; initials, dots, or lines to show Yunnan Province, Si River, Canton, Hong Kong; use some symbol, as *xxx*, to show Tropical China.

Writing sentences. Write sentences about South China, using the following expressions: rocky coast, pirates, rice paddies, terraced mountains, tea plantations, sweet potatoes, rafts of logs, treeless north, jointed stalks, Si delta, densely populated, houseboats, possibilities.

SOME OF CHINA'S PROBLEMS

China gets some Western knowledge.

About a hundred years ago, there began for the people of Europe and America a period of time which may be called the *Age of Science*. Until that time, we had neither goods nor knowledge that China wanted, and her idea about wanting to be left alone was quite natural. The Chinese are now beginning to see that the West has things that they want—new knowledge, new machines, new ways of doing things—so China has begun to change. She is beginning to use some Western ways, but she has so many people that she cannot make changes quickly. It is a great task to change the minds of hundreds of millions of people. China is now sending a few of her young men and women to the schools and colleges of America and Europe. Many of them upon their return have replaced the foreigners who formerly taught in the Chinese colleges. Her colleges are becoming more like those of Europe and America; the students are studying science in addition to the sayings of the Chinese wise men of long ago.

Many of the college students have given up their native style of dress for the less comfortable and less satisfactory kind of clothes that we wear.

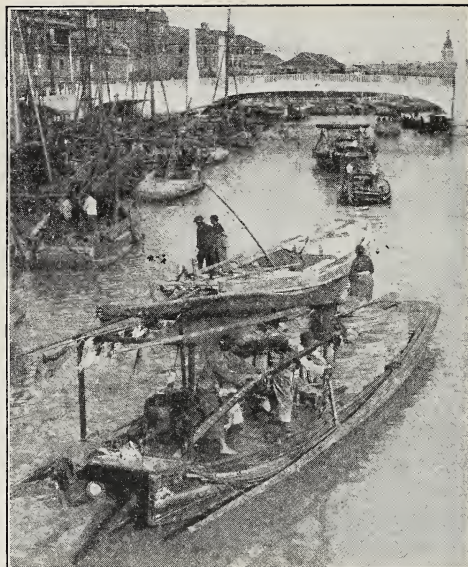
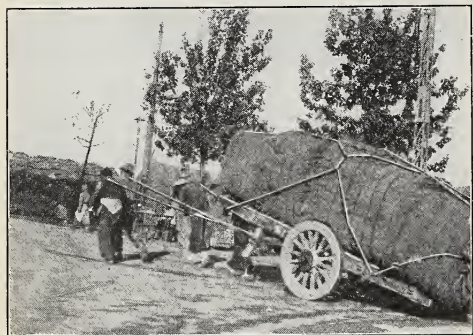
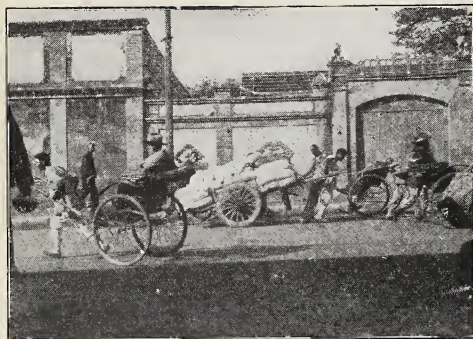
Western machines. Steamboats are replacing some of the junks on Chinese rivers and canals. Automobile roads are beginning to replace some of the old trails where men trundled wheelbarrows and donkeys carried packs. There are many telegraph lines, a few thousand miles of railroad, and more railroads being planned. Some Chinese farmers are changing from the old, old plan of growing nearly everything needed on each little farm. Instead, some farmers now grow only two or three things and send most of what they raise to market. Factories are being built and



Fig. A. A wealthy Chinese lady in native costume, equipped with European and American machines.

Government and army. After having been an empire for thousands of years, China became a republic, in name at least, in 1912. Civil war soon followed. After despising soldiers for centuries, China has, unfortunately, begun recruiting, training, and equipping armies like the armies of Europe and America. One of the obstacles to getting a central government established is the fact that different provinces have been ruled by different generals who cared little for the welfare of China as a whole.

The kin group. The Chinese people think of themselves as members of a family, or a *kin group*, rather than as citizens of such a town or county or province. This makes it difficult for the people to have what we call *public spirit*. Probably this is one reason for the strange fact that China has so few good roads.



Photos J. Russell Smith

Figs. A, B, and C. Man power in China pulls the wagons and rows the boats. Find in these pictures: a jinrikisha; a load of flour pulled by man power through the streets of Peiping; a boatman poling his boat on one of China's many canals; men working as dray horses in the streets of Tientsin.

The many generals in the different parts of China have their own armies, but none can rule the whole of the huge country.

At present, the Chinese people are suffering much. The generals tax the people and use the money on their armies and in graft, and do not build roads or keep up the embankments. This neglect lets the rivers flood large areas of crop land, and makes the famines worse. Millions of Chinese have starved to death in recent years.

Foreigners interfere. The family or kin idea made the government of China so poor and weak that other nations began to take her land. Russia took part of Manchuria; Japan took this away from Russia and also took the island of Taiwan; England took Hong Kong and Weihaiwei; Germany took Shantung; and France took a corner of South China.

Today, the cry of the young people of China is "China for the Chinese." This seems fair enough, especially as the Chinese are a friendly, good-natured people and are friendly to other nations who wish to be friends to China. China may, in the future, become the most powerful nation in the world. She has so many strong people. If China should become organized and armed as is Japan, or as are some nations in Europe, she might be the most powerful military nation in the world.

The United States has taken nothing from China, but has helped her all she could, and is regarded as China's friend.

If China becomes rich. Also, these hundreds of millions of people might make the whole world much richer if they themselves became more prosperous, because then they would trade with the rest of us.

It is good for a nation to have rich neighbors; no one wants to live next to the poorhouse. We have more trade with Canada and her 10,000,000 prosperous people than with all China. Great Britain and Germany, the two greatest manufacturing nations of Europe, each has its greatest trade with the United States.

The present trade of China. This trade is small because the people are poor; they work by hand instead of with machinery; they have few railroads, and are disturbed by war. Their chief exports are silk and silk goods, tea, coal, eggs, tung oil for varnish, hides, wool, and many small articles. Their chief imports are raw cotton, cotton cloth, cotton yarns, and some woollens, rice, sugar, machinery, paper, and tobacco. Kerosene for lighting the home is an important import; every peasant wants a lamp, if possible.

Future trade. If China could settle down to scientific industry and would use tractors and reapers and other farm machinery, such as is used in the United States, she could enlarge her agriculture very much. This is especially true of the drier lands of the north, northwest, and west — lands where the hoe culture will not support a family, but where the machine culture can.

China has coal, iron, wool, leather, and, above all, labor. Those millions of people are the best workers in the world.

The main problem is a political one. Can China have a good government? Can she have peace? Good government is one of the hardest things in all the world to get and to keep. In this age of science and machinery, peace and good government are more important than ever before. This is because industry now does big things which can be done only by many people working together.

American and European engineers are

ready to help China with plans. American machinery is ready to equip mines, quarries, and fields, and to whir in the factories. If China develops riches, it means riches for us, too, through our trade with her. The lack of prosperity in Europe after the World War soon made hard times in the United States also.

THINGS TO THINK ABOUT AND TO DO

Helpful hints. Use the following expressions in sentences, making use of the accompanying hints: 1. Age of Science. (How many useful inventions do you know of that have appeared since 1800?)

2. Kin group. (How does it harm Chinese government?)

3. Chinese generals. (How do they oppress Chinese people?)

Aladdin's lamp gave new things for old. In two columns, "Old" and "New," list the ways in which China is changing: school subjects, school-teachers, dress, river transportation, passenger travel, land transportation, roads, farming, crops, factory power, factory-made articles, government, patriotism, army.

Foreigners in China. Draw or fill in a map of China, coloring differently the parts taken by Russia, Japan, England, Germany, France, and the part left to China. Below the map, keep a color key.

Salesmen or soldiers? 1. Make a list of the things that we may sell to the Chinese of the future: to the farmers, miners, factories, stores, railroads.

2. Why is the United States wise as well as just in trying to make friends of the Chinese?

CHAPTER SUMMARY

The judges and the map of good and bad. Draw an outline map of China and put in the names of different parts. Let one group tell the good things about each part; one group tell the bad things; one group serve as judges.

The important things. Make a list of the most important things which you have learned about China.

Riddles. I am thinking of——. Let the class tell what you have described.



Courtesy of Japan Tourist Bureau

Figs. A-B. At the left is a Japanese bride and her sister standing in front of the side gate of their home. Above is famous Mount Fuji. It is a perfect volcanic cone and almost sacred to the Japanese.

JAPAN

Someone has said that Japan is a country of few resources, and that her people have made the most of them. As you study this chapter, make notes, so that when you have finished, you can prove whether that statement is correct or incorrect.

A COUNTRY THAT CHANGES

Studying the map. An American aviator flew from New York to Japan. He made stops at Ottawa, Moose Factory (on James Bay), Churchill, the mouth of the Mackenzie River, Point Barrow, and Nome, Alaska, and two places on the coast of Kamchatka. Why did he take this route? (See a globe.)

Japan is a string of islands. Name the four large ones. There are also hundreds of smaller islands, and a thousand of little ones. They are volcanic islands, and therefore mountainous. The most beloved scene in all Japan, one shown in thousands of pictures, is the extinct volcanic cone, Fujiyama, which the Japanese almost worship (Fig. 234-B).

Find places on the eastern coast of North America in the latitude of the

southern end of Kyushu Island, and of the northern end of Hokkaido Island (Figs. 237-A and 237-B). These pictures were taken near each of these places in the same week in December. What do they tell you about the climate in northern Japan and in southern Japan?

In what ways would you say that Japan and Great Britain (Fig. 2-A) are alike? Explain.

Is Japan like China? Japan does not look like her neighbor, North China. North China has wide plains; Japan is very mountainous. Indeed, there is no part of Japan from which, on a clear day, you cannot see a mountain. So much of the land is steep and mountainous that only about one sixth has been made into fields. This is one of the reasons why Japan is a poor country.

The mountains of North China are bare or almost bare; those of Japan have green forests, because there is more rain in Japan than in North China. In the winter season, the wind blows much of the time from the northwest, across China,

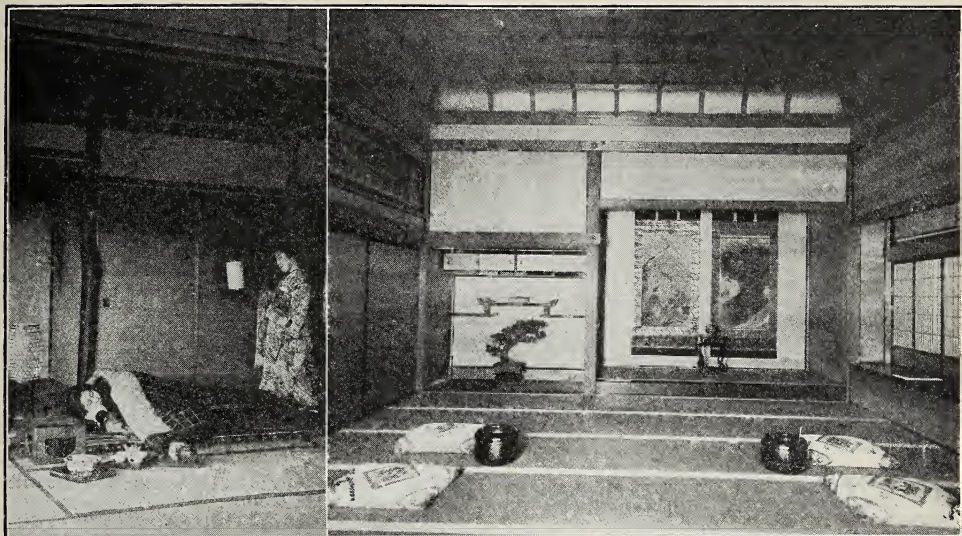


Fig. A. Furniture is simple in the Japanese house. The Japanese sleep on the floor on mattresses that can be rolled up and put into a closet by day. They sit on the floor or on cushions. How does this affect the cost of living? The dwarf tree in the pot at the back of the room may be a century old.

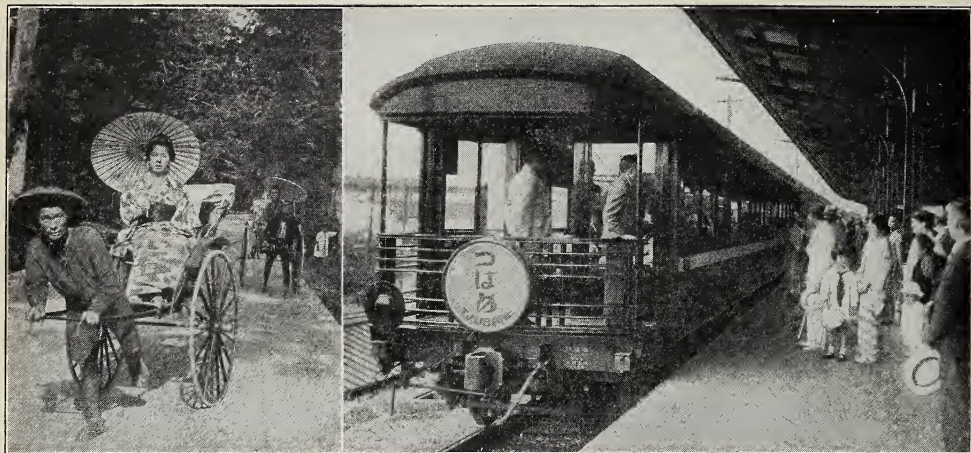
Manchuria, Chosen (Korea), and Japan. In China it is a dry wind, but in coming across the Sea of Japan the wind picks up enough moisture to pile so much snow on western Japan that it sometimes reaches the eaves of one-story houses.

Migrations from China. We might say that China is Japan's mother country. Long ago, Chinese people migrated into Chosen. From Chosen they migrated into Japan. But there were people in Japan already; perhaps they were Malays from the South Sea Islands. These native brown people mixed with the Chinese who came. The Japanese are therefore not altogether like the Chinese people, although in some respects the two peoples are similar.

In the United States we learned most of our ways of doing things from our ancestors or relatives who came from Europe. In the same way Japan learned from China. The most important crop of Japan is rice, grown as the Chinese

grow rice, and eaten with chopsticks as the Chinese eat it. From China came the mulberry tree, the silkworm, and the silk industry; silk is Japan's greatest export. From China came the art of making the beautiful lacquer, the art of making paper, and the use of paper for window glass, house walls, strong bags, and many other useful articles. Picture writing also came from China. The Chinese and the Japanese can therefore each read the writing of the other. The Chinese also took with them to Japan the Buddhist religion, which they in turn had gotten from India. Therefore we may say that Japanese culture — that is to say, Japanese ways of doing things and thinking about things — came in large part from China.

Japan closes the door. Shortly after the discovery of the sea route to the Far East (page 71), a number of Europeans went to Japan. There they settled and began to teach their form of religion. After a time, the Japanese became fearful



Figs. A-B. The old and the new ways of transportation in Japan—a jinrikisha and a limited express train with observation platform and a name—*Swallow*.
Courtesy of Japan Tourist Bureau

that the Europeans were planning to take possession of their government; they then drove every European out of Japan, and had nothing to do with any foreign country for over 200 years.

Japan opens the door. In 1853 an American commodore sailed his fleet into a Japanese port and persuaded the Japanese government to make a treaty with the United States. As a result, Japan sent a minister to Washington and we sent a minister to Japan. The two countries then began to trade with each other. Other countries also sent ministers and began to trade with Japan. "Ministers" are men sent by their own government to live in a foreign country and there to conduct any business or other affairs that might arise between the governments of the two nations.

Western learning. When trade relations were established with Japan, her people saw that the Western peoples (Europeans and Americans) had machines and ships and guns, and that they knew many things that the Japanese did not know. Japan decided that the only way

in which she could remain independent was to get these Western machines for herself, and to adopt Western ways of doing things. Therefore she employed Americans and Europeans to teach her people. She sent her sons to colleges in Europe and America. At home she founded schools and colleges much like those of the West. Some years ago, I visited the professor of geography in the University of Tokyo. We had both studied under Professor Ratzel, the great German geographer at the University of Leipzig. This Japanese professor could therefore speak German; but he spoke to me in excellent English, and on his bookshelves were books in French and other foreign languages.

Western ways in Japan. The Japanese army was trained by European officers, and the ships of her navy are like those of Europe and America.

The Japanese government has aided industry in many ways. It has helped to build railroads, telephones, and telegraphs like those we know; to make experiment stations like our own in order to find out



Photos by Wm. H. Koenig and Consulate General of Japan

Figs. A-B. A good title for these two pictures is "December in Japan." The smaller picture was taken early in December in the southern part of Kyushu (Fig. 215-A [W-3]). The larger picture was taken during the same month in Hokkaido (Fig. 215-A [X-2]). The palm tree beside the peasant's cottage tells the story of mild winters in southern Japan. The evergreen trees heavy with snow and the skiers tell the story of frosty winters in northern Japan.

the best ways of growing crops. It has lent money to companies that built factories to start new industries like those in the West.

The larger cities of Japan have taxicabs and electric cars, and some buildings like those in the cities of Europe and the United States. Tokyo, the capital, has more buildings than other cities in the Western style of architecture, because much of Tokyo was destroyed by earthquake and fire, and was then rebuilt with buildings of steel and concrete.

A united country. There is one great difference between Japan and China and Chosen. The Japanese people have learned to think of themselves as *Japanese*, not only as members of such-and-such a family. They love and serve their country with a great love. They love and worship the emperor, whose family is the oldest ruling family on earth. Japanese children are taught that their emperor is descended from the sun goddess. Japan is organized as a united country, with one

army and one navy, instead of having a half dozen semi-private armies as has China.

THINGS TO THINK ABOUT AND TO DO

A map corner. 1. Turn to Figure 215-A and make a large map showing all the land which you see east of 120° E. and north of 20° N. From Figure 3-A, draw the island of Sakhalin and label Japan's part—Karafuto.

2. Locate and name Chosen, Manchuria, the larger islands of Japan, and the neighboring seas.

3. Put on the map the ocean currents that are near Japan. Tell what they do.

4. As you continue your study of Japan, locate on your map each place about which you read.

Inherited or borrowed. Under the two headings, "Inherited" and "Borrowed," list the ways, ideas, or things that the Japanese have learned from the Chinese, or have borrowed from Western countries.

Family differences. Head two columns "China" and "Japan." Write short expressions in these columns, comparing the two countries as to: people, government, farmlands, mountains, crops, rain, snow, winds, industries, education, houses, surface, and anything else that you can think of.



Fig. A. The Japanese town in the silk district of Japan about which you will read on this page.

AN OVERPOPULATED COUNTRY

An overpopulated country. Japan has more than four people to every acre of cultivated land. Measure off an acre of ground (209 feet square). Then mark off a quarter of it, and imagine, if you can, the task of getting enough food from that quarter of an acre to keep yourself for twelve months. No wonder the Japanese are among the greatest fishermen in the world! There is not room to raise much meat, so they catch fish, for which their island location gives them good opportunity. I counted sixteen kinds of dried fish in a market in a little town in the interior of Japan. The Japanese eat about five times as much fish a person as we do; but they eat only six pounds of meat a year, while we in the United States eat about 150 pounds.

Hard work. I spent some time in a small town in the silk district of Japan.

The town is located at the edge of a plain. The plain is an old lake bed filled in by mountain wash, and it is covered with flooded rice fields, except in a few places where the ground is too low. Here the Japanese grow the lotus, a kind of water lily, the roots of which they dig up for food.

The town is situated at a place where a stream comes down from the mountains. Two miles up the valley of this stream there is a village, but there is no automobile road, no wagon road, to this village. All the crops, all the fertilizer, everything that goes up and down is carried on the backs of people. On the steep slopes of that little valley is rice field after rice field, sitting like steps near the stream. Farther back from the stream, the steep hillsides are terraced with stone walls and covered with vegetable gardens and mulberry orchards, where many people pick mulberry leaves. Every day during my visit I saw scores of women, boys, and girls coming down to the village at noon and at evening, carrying heavy baskets of mulberry leaves. The load usually weighed from eighty to a hundred pounds.

The silk industry. The leaves were chopped into bits and scattered over trays, where the little silkworms greedily ate them, with a faint, cracking noise. Hundreds of houses in this town, and in hundreds of other towns and villages, have a roomful of racks, supporting many bamboo trays where thousands of silkworms eat the mulberry leaves. After a few days of eating and growing, they split themselves down the back, crawl out of their old skins, eat more mulberry leaves, grow big, and again change their coats. Finally, they become still. The worms are now full grown. Straw is spread among them. They crawl into it and spin their cocoons, thus making silk



Courtesy of Japan Tourist Bureau

Figs. A-B. At the left are silkworms, four weeks old. They are feeding on mulberry leaves. In a week they will begin to spin their cocoons. At the right the pickers are gathering the cocoons from the straw bed.

thread, the great export crop of Japan. Producing silk makes work for many women and children in Japan, and gives a crop to sell from a farm that is so small that the family often eats everything that their land yields. Two farms out of every five in all Japan produce silk.

The cocoons are picked out of the straw and put in hot water. This loosens the end of the strand of silk. Four or five strands are fastened together to make a thread, such as we can use in weaving. These threads are wound upon a reel. A little reeling is still done by hand, but most is done in big factories by machinery in the same way as in Europe or America.

Tea. Tea is another crop for the Japanese hillsides and the Japanese women. The tea tree, like the mulberry tree, is grown on hillsides where rice cannot be grown. The trees are trimmed and kept small, so that the leaves can be easily picked, and each summer, while thousands of women are picking mulberry leaves, other thousands are picking tea leaves. These are dried in kettles over fires, and

a third of the crop is exported. Clear tea without sugar is the universal drink of Japan. Whenever you enter a home, they offer you tea. It is sometimes offered to you in entering a store.

North and south in Japan. All of Japan has the rainy summer of the monsoon climate, like that of the shore regions of China (page 226), but what is the difference in latitude between northern and southern Japan (page 215)?

Southern Japan has rice for its great crop, but sweet potatoes are grown on the hillsides where rice cannot be grown, and there are many vegetable gardens and orchards of persimmon, pear, apple, and other fruit trees.

Northern Japan, which has a climate much like that of Nova Scotia, grows northern crops — wheat, barley, rye, potatoes.

The Japanese do not like cold weather; so they have stayed away from the northern island with its snowy winter. This part of the country is still sparsely populated. There the farming is more like



Courtesy the Japan Tourist Bureau

Fig. A. All the bushes which you see in this picture are tea plants growing on a tea plantation in Japan. The Japanese girls are picking the tender leaves which come out in the spring.

that of Canada and Wisconsin than like that of the rice lands of southern Japan.

Japanese cities. As soon as Japan began to build railroads, steamships, and engine-driven factories, her cities began to grow. She had been an agricultural country like China, but large factories, ships, and railroads made Tokyo, Osaka, Nagoya, and Kobe to become large cities. Find from Appendix how many people they have. What cities in the United States have about the same numbers of people? These cities have trolleys, trucks, automobiles, and sewers, as American cities have, and many buildings with elevators, and steel frames built in such a way that earthquakes may not destroy them.

Tokyo and Yokohama. Tokyo, the capital, is the largest city, with many government officials and a great variety of industries, some carried on in the European way, many in the old-fashioned Japanese

way, largely by hand. Yokohama, the port for Tokyo, is the chief port of Japan, the chief export center for silk, with large imports of rice, sugar, wheat, and machinery.

Other cities. Osaka is sometimes called the "Manchester of Japan," because of its many cotton factories, using cotton from India, China, and the United States. Osaka makes iron and steel with coal from the near-by island of Kyushu, and iron ore from China and Chosen. Her harbor is shallow, but the near-by city of Kobe has a good harbor and is the port for Osaka.

Nagoya and Kyoto make much porcelain, pottery, lacquer, and bronze ware. Kyoto is famous as the old center of Japanese culture and fine, artistic Japanese industries.

Nagasaki, near the coal fields, has ship-yards and is a coaling station for ships.

Trade. Starting new industries made

much trade. We have several times as much trade with a million Japanese as we have with a million Chinese. We sell them cotton, steel, oil, and hundreds of kinds of machinery. They sell us raw silk for our mills, and silk goods for our stores; they send us paper, pottery, toys, and many beautiful things.

With all these new jobs, the population of Japan began to increase rapidly; but she could increase her fields only a little. Therefore she soon began to import food. How could she pay for it? Only by doing as England had done—by selling manufactures. Japan set out to do this. Then Japan began to find out that her four main islands were indeed a poor country. Her mountains and regular rainfall give her some water power (Appendix), and she is using it well, but she has very little coal and almost no iron, and has to import her iron ore from China. She has a little copper, and it is the only mineral with which she can supply herself. She must import oil, and to fertilize her fields she must buy shiploads of phosphate rock, nitrate, potash, and bean cake. To make clothes, she must import cotton, wool, and leather. For her buildings, she must import lumber. No other nation with so many people has so few resources for manufacturing, and, to make matters worse, her farms are so small that she must import some rice, wheat, sugar, and nearly all of the meat the people use.

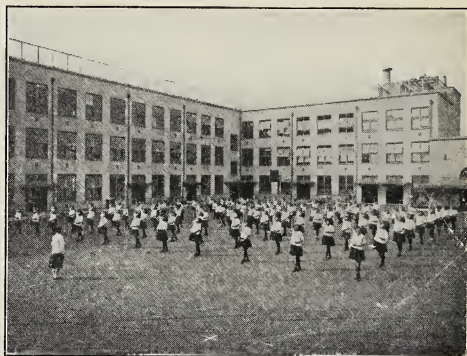
THINGS TO THINK ABOUT AND TO DO

East- and west-bound ships. 1. Draw two ships in your notebooks. On one ship, write the names of Japan's exports; on the other ship, the names of her imports.

2. Below your picture answer how England and Japan are alike; how China and Japan are different; what this tells about the people of the three countries.

Why and what? 1. Why are so many of the Japanese people fishermen?

2. Why do Japanese eat so little meat?



Courtesy the Japan Tourist Bureau

Fig. A. The big building in the picture is a Japanese grammar school. What are the pupils doing that you do in your school?

3. Why are two foods obtained from swamps?

4. Why do the Japanese buy so much fertilizer?

5. Why do they have to trade?

6. Why do they raise mulberry trees?

7. Why do they terrace their hillsides?

8. Why must people carry loads?

9. Why do Japanese streams make good water power?

10. Why did Japanese trade increase?

11. What do the Japanese farmers do with their hillsides?

12. What part of Japan has a sparse population? Why?

Unravel the story of silk. Write the story correctly: 1. Cocoons are dropped into hot water.

2. Their skins split down the back.

3. The strands are wound on a reel.

4. Workers must find the end of the thread.

5. They crawl out of their skins and eat more.

6. Mulberry leaves are chopped.

7. They attach their cocoons to straws.

8. Four or five strands are fastened into a thread.

9. Leaves are scattered on bamboo trays.

10. Silkworms eat noisily and grow.

11. They become full grown.

An experiment. With the help of your teacher perhaps you will be able to obtain some silk cocoons. Unwind a cocoon. Notice how much work it is to get a few strands of silk. Why do you think the Japanese are a hard-working people?



Courtesy Current History

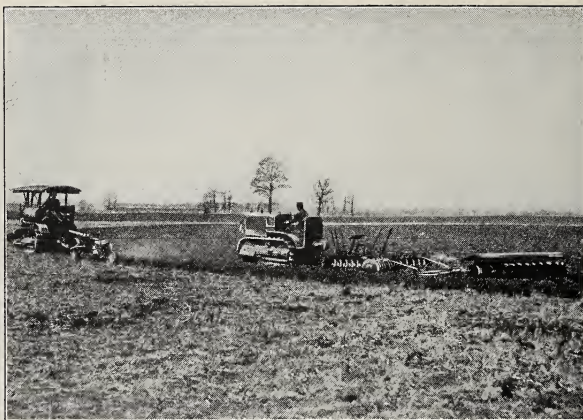
JAPAN'S GREAT PROBLEM — TO FEED HER PEOPLE

Foreign trade. The Japanese government has given money to companies to help them to run steamship lines to all continents; the government has done all it could do to help trade, and Japan has had a great increase in exports of cotton cloth and many other manufactures to countries in Asia, and even to Europe.

Taiwan and Manchukuo (Manchuria). Soon after she set out to become like England, Japan thought she must have more land. In 1894-95, in a war with China, she took the big island of Taiwan (Formosa). From Taiwan, with its 4,000,000 people, Japan gets sugar, bananas, and camphor.

Some Japanese people migrate every year to Chosen (Korea), Manchukuo, and to South America. But still the population of Japan increases rapidly because the birth rate is high.

Manchukuo is the coveted land prize of the Far East. It was the home of the Manchus, roving horsemen who captured China in 1644 and ruled it till 1912.



Figs. A-B. At the left is a small map of the countries which you will read about in this story. Jehol is Chinese territory which at any time may change hands and become Japanese. The picture above was taken in Manchukuo (Manchuria). Find on this page a sentence which exactly describes this picture.

Until 1932 Manchukuo was a part of China. The great plain of Manchukuo is good farmland, from the Amur River to the Yellow Sea. As it is beyond the Great Wall, and a grassland, it was the home of tent people until a few years ago.

Soon after Japan's war with China, Russia made a treaty with the Chinese government and built railroads across Manchukuo to Vladivostok and to Dairen, and got possession of Dairen. Russia then made a treaty whereby she got concessions from the Koreans, and it looked as though she would soon have her railroad right down at Japan's front door. Then Japan fought Russia. Russia was about to have civil war with her peasants at home, and Japan won the war. In the treaty settlement, Japan got the Russian railroad in southern Manchukuo with a strip of land about a third of a mile wide on each side of it, and a port, now called Dairen, at the south end of the railroad.

Chosen (Korea). In a few years Japan annexed Chosen (Korea). Chosen is about the size of New Jersey, Delaware,



Courtesy South Manchurian Railway Co.

Fig. A. You are looking at the Fushun Collieries, the largest coal field in Manchukuo (Manchuria). The mine shafts, as you see, open directly on the hillside where the coal cars stand on sidings.

Maryland, Virginia, and West Virginia. Its climate is much like that of these states, but Chosen has more than *twice as many people* as these states have. There are few large cities, and most of the people are farmers. Chosen has so much rainfall that mountains are naturally forested and the country is good for farming. Some silk is grown. Rice, barley, and soy beans are the chief crops, and rice is exported to Japan.

The Koreans, like the Chinese, have been civilized for a long time, but the government was so corrupt that almost any officer could be bribed. This made it easy for Japan to take Chosen.

The question of Manchukuo. You know that the Chinese government was weak for many years after the fall of the empire in 1912 (page 231). There were

bandits everywhere, including Manchukuo. So, in 1931, the Japanese sent armies into Manchukuo and took possession of it. They set up a government, called *Manchukuo*. The Japanese call it a *buffer state*, but most of the real officials are Japanese and the Japanese army keeps order there.

China claims that Manchukuo belongs to China. Of its population of thirty million, twenty-nine million are Chinese. Since the railroad was built, Chinese have flocked there by the millions and have begun farming. They have made Manchukuo the world's greatest exporter of soy beans. The Chinese work so well, live on so little, and save so much, that the Japanese cannot compete with them. Also, the Japanese do not like the cold winters of Manchukuo. The Japanese have owned

the Manchukuo Railroad for twenty years, but there are very few Japanese *settlers* there — only about 200,000 — and most of them are in the cities.

The climate and surface of Manchukuo are like those of Minnesota and Manitoba. In the east are forested mountains. West of the mountains is the great central plain, level and treeless, with black soil like that of Russia and Dakota, excellent soil for wheat, oats, rye, and barley, and for millet and soy beans. Manchukuo also has coal and iron. I have seen iron works in the Japanese strip along the railroad.

When you consider the things which Japan must import (page 241), you can see why the Japanese government is so determined to hold fast to Manchukuo (Manchuria and perhaps more). Make a list of the things Manchukuo might send to Japan; buy from Japan. Manchukuo has much unused land. Why is this important to a country like Japan?

Japan has spent so much on the army and navy and on starting new industries that the government is greatly in debt. The Japanese are more heavily taxed than any other people.

The Chinese have poor armies, but they also fight with *boycotts*. By this is meant that they refuse to buy Japan's goods. By this means they have hurt the trade of Japan and of other countries that have hurt their feelings.

Japan, China, and Manchukuo will continue to be one of the interesting parts of the world to watch. Let us hope the strife over Manchukuo does not make China a militarist nation, or start another World War.

THINGS TO THINK ABOUT AND TO DO

Use these expressions. Use each of the following expressions in a sentence about Japan: camphor, Manchus, Manchukuo, boycotts, militarist nation, government became corrupt, Chinese bandits, fall of the

emperor, Japanese settlers, great migration, another World War.

Two sides to the quarrel. Select two groups of pupils from your class, "Chinese" and "Japanese." Discuss the question: "Manchukuo and Chosen should belong to Japan."

For extra credit. Find what the League of Nations did about Japan's (1931) invasion of Manchukuo.

CHAPTER SUMMARY

Match me. For every statement below made for China, make a corresponding statement for Japan. You may play this as a team-scoring game, or you may fill in "China" and "Japan" columns in your notebooks. Perhaps you can make the list of statements longer.

Chinese came from central Asia; they are mostly farmers; they eat mostly vegetables; they wear padded clothes; their government is poor; they pay heavy taxes; their country is large; their population is dense; their winters are cold; there are often famines; they have summer rains; there is much desert land; there are few trees; their industries do not use much machinery; they are migrating north and west; foreigners have taken some land and cities; their resources are large; large areas are almost unexplored; they love peace.

Make similar lists for Great Britain and Japan.

Why's, how's, and what's. 1. Why did Japan learn Western ways?

2. How did she do it?

3. How did it affect her trade with the United States?

4. Why do the Japanese people eat so little meat?

5. Suppose artificial silk (rayon) came into universal use. What difference would it make to Japan?

6. What is unusual about new buildings in Japanese cities?

7. Why did Japan close her door?

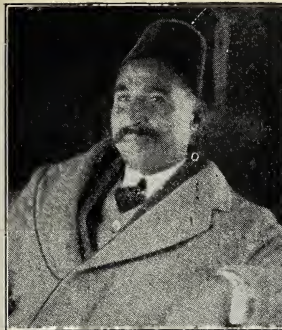
8. What did she shut out?

9. What advantages came to Japan when she opened her door?

10. What is the "Manchurian question"?

Words to use. Use each of the following words in telling about Japan as a manufacturing country:

| | | |
|------------|-------------|-----------------|
| population | water power | coal |
| iron ore | oil | fertilizer |
| cotton | wool | leather |
| lumber | meat | sugar |
| wheat | boycott | steamship lines |



MOHAMMEDAN



HINDU



Photos J. Russell Smith
SIKH

Figs. A, B, and C. Three gentlemen whom you will meet in this story.

INDIA, CEYLON, BALUCHISTAN, AND AFGHANISTAN

India is the name we give to the land that lies between the Arabian Sea, the Bay of Bengal, and the Himalaya Mountains, but the people who live in India have no word for India. When you have read this chapter, tell why this is so, and be able to discuss some of the problems that arise from this fact.

PEOPLES AND CULTURES IN INDIA

Map and graphs. On a map of North America find a place in the same latitude as the southern point of India. Then measure carefully the degrees of latitude and longitude and find where the following places would be on the map of North America — Calcutta, Gwadar (west), the northern tip (Fig. 215-A).

Make a table to show the area and population of the United States, Great Britain, and India. What does this table tell you about India? Add to your table a line giving similar facts for all North America, all South America, and Australia. You are now able to tell something about the population of India. Your class can have a very interesting discussion of these facts.

Many peoples. You can think of India as a huge pocket, with the opening at the top. For ages, peoples of many races and from different parts of central Asia found

their way into the pocket by way of Afghanistan (page 11). A glance at the map will show that these peoples could not get out at the bottom of the pocket. How do these facts help to explain the title of this paragraph?

I asked the handsome man shown in Figure 245-C who he was; he replied, "I am a Sikh." The Sikhs are a people that live in the upper Indus Valley. Another man, entirely different in appearance, was riding in the same railway car with the Sikh and me (Fig. 245-A). This man said, "I am a Mohammedan" (a name given to one of the important religions of India). The dark-skinned man shown in Figure 245-B said, when I visited his factory, "I am a Hindu"; he meant that he believed in the Hindu religion. A short man living in the forest country of southern India would say that he is a Bhil, meaning one of many tribes of peoples living by thatch-and-patch in the forests of India. These are only a few of the many peoples that live in India.

India is almost a continent with respect to population and the number of peoples that live there. Compare India to North America in population. In respect to the



Photos J. Russell Smith

Figs. A, B, and C. The two gentlemen at the left I snapped in the Khyber Pass (Fig. 12-A); the two gentlemen at the right live in the far north of India near the Kashmir boundary (Fig. 214-A); the gentleman in the center lives in Madura in southern India (Fig. 214-A). As you see, he is a black man and has two caste marks on his forehead.

variety of its peoples, India is like Europe. More than thirty languages are spoken in India, each by more than 200,000 people.

The British come. India is a part of the British Empire. The British East India Company went there to trade in 1608. The company had to build a fort to protect its warehouse filled with goods. Then the British had to have soldiers in the fort. The soldiers fought with some Indian people — and now, 300 years later, the map of all India is marked as a part of the British Empire. You remember that the *Japanese*, fearing for their independence, drove all the Europeans out of Japan in 1638.

Many governments. The government of India is an interesting mixture of many, many kinds of government, such as only the British Empire contains.

A British viceroy (vice king), sent out by the King of England, who is also emperor of India, has a capital at Delhi. The viceroy is really sent by the British Parliament and not by the king, and he is supposed to rule British India and the native states. British India has fifteen

different parts. You may think of them as being something like our states. Each has its governor, sometimes called *commissioner*. But a large part of India, with about 80,000,000 of her people, is comprised of so-called *native states*. Each state is ruled by a native prince. Some of the native rulers live in much luxury and grandeur, wear beautiful garments of silk, and travel in rich and showy trappings. One of these princes is the Maharaja of Baroda. He has such a great store of gold and such vast estates that he is sometimes said to be the richest man in the world.

One hundred nineteen of these princes or chiefs are of sufficient greatness to be saluted by guns on public occasions. There are 441 more who are not great enough to receive a gun salute. But each one has an Englishman who is his "adviser," or "commissioner," or "agent," and, to some extent, his ruler. The British Government does all it can to make the native rulers feel independent, and also to keep them from troubling one another, or the British, or their subjects.

A native state. At Lahore, for instance, is an official called the *Governor-General, Punjab States*. The Punjab is the name applied to the upper Indus country. But this Governor-General of the Punjab States deals with twenty-one lesser states in the Punjab and with thirteen greater states in the Punjab.

Let us look at one of these greater Punjab states by name. Patiala comprises 6,000 square miles of land and is halfway between Delhi and Lahore. It has 1,500,000 people.

This state is governed by Lieutenant General H. H. (His Highness) Maharaja Sir Bhupindar Singh Mahindar Bahadur (Great Captain), G. C. S. I. (Knight Grand Commander of the Star of India), G. C. I. E. (Knight Grand Commander of the Indian Empire), G. C. V. O. (Knight Grand Cross of Royal Victorian Order), G. B. E. (Knight Grand Cross Order of the British Empire), A. D. C. (Aide-de-camp). He has a personal salute of nineteen guns. See how the British please him with titles and honors!

The peace that comes with British rule and the prosperity that comes with railroads built by the British in India, make His Highness the Maharaja richer than were his ancestors who ruled before the British came, and he wants the British to stay in India, for is he not prosperous, at peace, and doing pretty much as he pleases in Patiala?

Ancient crafts. Like the people of China and Japan, the craftsmen of India, working generation after generation, have acquired great skill in making beautiful objects of metal, ivory, wood, silk, and cotton. Everyone who travels in India wishes to buy some of the fine Indian wares. Travelers are interested to see the craftsmen sitting in their little shops called *bazaars*. The front of the shop is

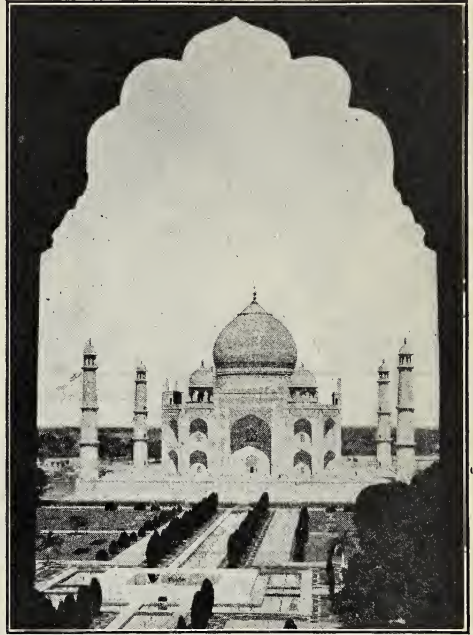


Photo J. Russell Smith

Fig. A. At Agra (Fig. 214-A [Q-4]) stands the famous Taj Mahal, built by Shah Jehan, one of the Grand Moguls, or former rulers of India, in memory of his queen. Many people believe that this building is the most beautiful example of Mohammedan art and architecture in the world.

open and the workman sits there beside the street, pounding copper, making shoes, jewelry, or other articles—working as his father worked before him and waiting for a customer to come.

THINGS TO THINK ABOUT AND TO DO

A free-hand map. 1. A free-hand map of India is easy to draw, for it is like a triangular pocket. Put on it important places.

2. As you continue your study of India, add other place names to your map.

Tongue twisters from India. Write sentences containing each of the following expressions: Sikh, Mohammedan, Hindu, Bhil; Maharaja; Taj Mahal; Grand Mogul; craftsman; adviser; native state; British Empire; Viceroy; agent.

Migrations to India. Reread page 11 and look carefully at Figure 11-A. Then give a talk about the peoples of India.

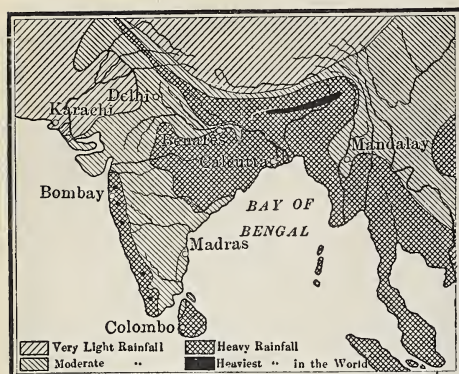


Fig. A. Normal rainfall conditions in India between May 1 and October 31.

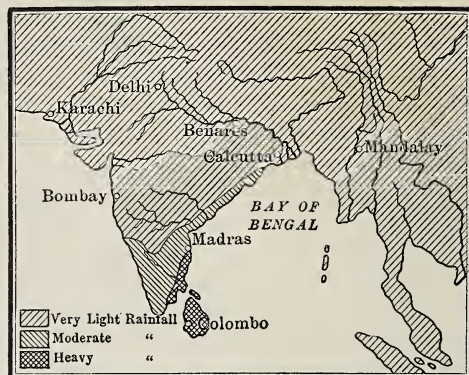


Fig. B. Normal rainfall conditions in India between November 1 and April 30.

☞ The maps. Examine closely the rainfall maps (Figs. 248-A-B). How heavy is the rainfall at Calcutta? at Karachi? at Madras? at Calicut, on the west coast? at Delhi?

LAND AND CLIMATE, VILLAGE AND FOOD

The monsoon. India, like China, has a monsoon climate (page 226). In the cold season, from October to March, most of the winds over India are from the land. From March to June is the hot season. The heavy rains fall from June to October.

During the months of rainy, muggy, hot weather, crops, weeds, and trees grow very rapidly.

Many kinds of land. The heavy rainfall gives two regions of natural forest, one in eastern India around the head of the Bay of Bengal, the other on the west coast. On this coast the rain winds from the Arabian Sea drench the slopes of the mountains (the Western Ghats). We know that rainfall less than ten inches, such as happens near the lower Indus, means desert. This is called the *Thar Desert*, or *Indian Desert*; a part of it has no people at all. It is as dead as the sand dunes of the Sahara. On the eastern and western edges of this desert center is an

area of grassland, with nomads who live much as do the nomads whom we already know (page 1).

The farms and the village. Nearly three fourths of the people of India are farmers or village artisans. They live in villages, where most of the houses are made of mud (Fig. 42-A). The village often has an open square or common, with a banyan tree shading a part of it. In most villages you will find a temple in the open space, and perhaps a school. But only a few children can go to school. Most of the people of India are unable to read.

Farms and animals. There are so many people in India that the farms are small. About half of them have less than five acres of ground. The fields are plowed with an inefficient wooden plow drawn by oxen—cattle in the dry part, water buffaloes (Fig. 275-A) in the wetter part. India has more than twice as many cattle as has the United States and they are used as beasts of burden. Hides and goatskins are important exports. But few of the cattle are used for food, partly because the people are too poor, more often because their religion forbids them to eat meat. Fortunately, they can use the milk and

butter. Many goats are kept for their milk, and the people also use the milk of sheep.

Food. The people of India live chiefly on grain, beans, and vegetables. The grain is rice, wheat, barley, or millet, depending on the climate of the locality. Instead of butter or fat meat, they usually eat vegetable oils. These oils are pressed from rape seed (a plant of the cabbage family), from peanuts, or from one of a half dozen other oil-bearing seeds which are unknown in our country. This simple food is eaten every day by most of the people of India. To make it taste better, they use many spices. Curry, a yellow, hot powder, is much used. I tasted it once. Oh! oh! so hot!

THINGS TO THINK ABOUT AND TO DO

An interesting comparison. 1. Copy the rainfall map of India in shades of blue. Draw lines for the three biggest rivers, and little crosses for the Himalaya and Ghat mountains. Draw arrows to show the summer monsoon winds. Next, draw a vegetation map of India, using symbols for trees, for grass, for farms, for deserts.

2. Below the maps, copy these sentences, filling in the blanks: When the summer monsoons blow from the to the they drop On the side toward the wind, it is Here grow. On the side away from the wind, grow, or it is a Nomads live in the; farmers live in the, and cattle are raised in the

Why's and what's. 1. Why do the people of India eat little meat?

2. Why do they export hides?
3. Why do they have small farms?
4. What foods do the people of India eat?
5. What oils do they use?
6. What animals do they raise?
7. What work do most of them do?
8. Of what do they build many houses?

Writing questions. Write questions for your classmates to answer about each of the following (Be sure you can answer each question yourself.):

monsoon
artisans

Thar Desert
water buffalo

nomads
goatskins

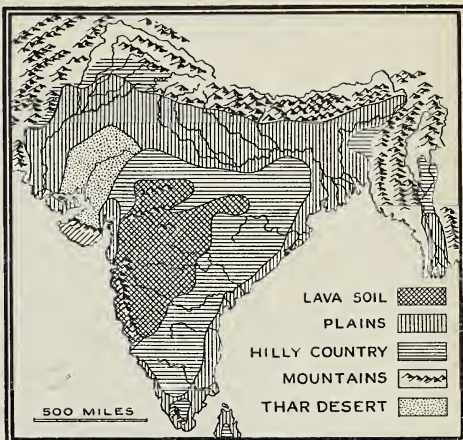



Fig. A. This map shows the various regions of India about which you will study in this unit.

THE REGIONS OF INDIA AND THE NORTHERN HIGHLANDS

 The map. What does the physical map (Fig. 214-A) tell you about the elevation of the city of Agra? the city of Lahore? of Mysore? and of Srinagar? This map shows you that India has three main classes of land: (1) the wall of mountains at the northwest, north, and northeast; (2) the low plain of the Indus and Ganges, the low plains on the east and west coasts of the peninsula; and (3) the plateau of the Deccan.

The Himalayas. On the Himalaya slopes we can find every zone of climate that we can find on any mountain anywhere. At the bottom is the hot tropic forest; at the top is the eternal snow that shuts Tibet away from the world. Between these extremes you can find small areas of many crops, from bananas to barley.

Each year, thousands of pack animals come through the passes with the produce of Tibet; also, thousands of oxcarts, loaded with apples, come down 150 miles from Srinagar in the cool Himalayan valley of Kashmir, to the hot plains of India, where apples will not grow. Kashmir is famous for fine shawls and a kind

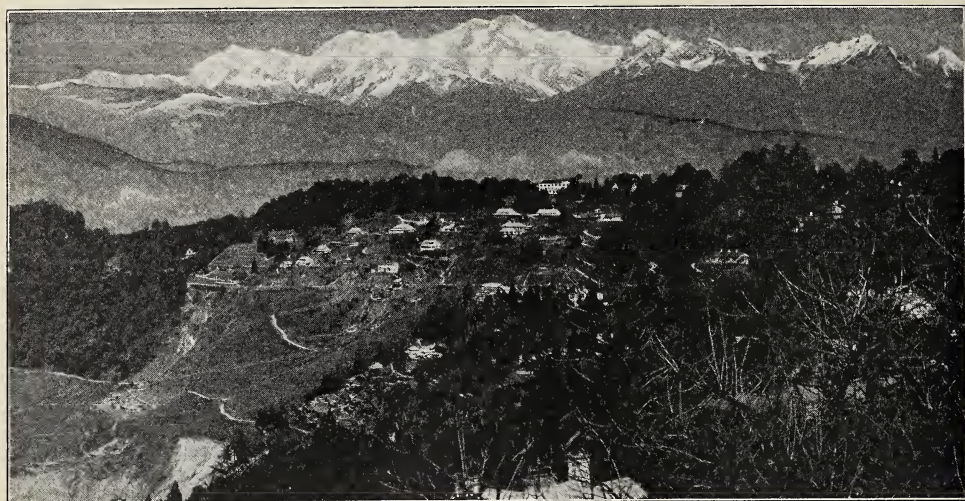


Fig. A. Darjeeling, a cool summer resort on the Himalaya slopes, Bengal, India. In the background, 100 miles away, is Mount Everest, the highest mountain peak in the world, 29,141 feet.

of woollen cloth made from the fleeces of sheep that pasture Himalayan slopes. Two small kingdoms, Bhutan and Nepal, tucked back in the mountains, are still independent except that the British "advise" Bhutan about foreign relations.

In Simla, the summer capital, and Darjeeling, you can find each summer most white persons who have to stay in India and can get away from the hot low plains.

Baluchistan. Find Baluchistan on Figure 214-A. This country is governed by the viceroy of India, but it is not really part of India. It is a part of the plateau of Iran — a high, dry plateau with a few little irrigated patches here and there in the valleys. To understand Baluchistan, turn to page 39 and again read about Persia. Baluchistan is a part of the same plateau, with the same kind of people, industries, exports, and imports.

Afghanistan. Afghanistan is not a part of the British Empire at all, but it is so much like the lands beside it that we shall study it here.

Afghanistan is a good example of a

buffer state. Great Britain and Russia took land and extended their empires, and have feared each other. Each wants to keep Afghanistan independent, but friendly to itself. Each country has built railroads right up to the border, so that, in case of war, it can quickly send armies into and through Afghanistan. But the Afghans want to be independent — so much so that travelers are not welcome.

Afghanistan is a mountainous country three times as large as Great Britain, and has a dry climate. It is estimated that one third of the people are nomads. A recent traveler says that most of the farming is done by irrigation, and much of the irrigation is with water from *kanats* (page 40). The chief crops of the peasants in Afghanistan are wheat, cotton, fruit, tobacco, oil seeds, beans, and rice. The irrigated area might be three times as large as at present, and the king has started an ambitious scheme of making canals. The possibilities of unirrigated cultivation, now about 2,000,000 acres, cannot be estimated. Meanwhile, the



Fig. A. In Fig. 250-A you were looking at the "roof of the world" from the distance of 100 miles. In this picture you are in a British army plane flying over the snow-clad Himalayas.

farmer's plow is a trivet of sticks with a soft iron tip; he reaps his crops with a fifteen-inch sickle, and carries them home on his own back in a wooden cage. He sells hides and skins, buys cotton cloth and salt.

THINGS TO THINK ABOUT AND TO DO

High, low. 1. Draw another free-hand map of India, and color it to show mountains, plateaus, and plains.

2. Show also: Western Ghats, Thar Desert, Brahmaputra River, Baluchistan, and Afghanistan.

3. Locate by dots and initials: Karachi, Madras, Calicut, Mysore, Srinagar, Kabul.

4. Below the map, answer the following: Name the three surface regions. What causes the Thar Desert? Name the big river valleys. Name a city on the east coast; west coast; on the plateau; in the Himalaya Mountains; in the Ganges Valley.

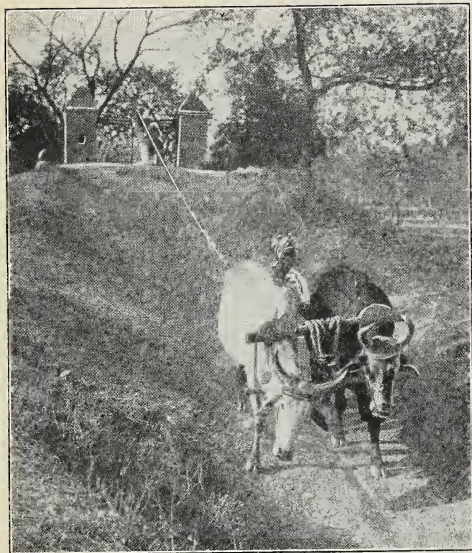
Afghans. 1. One Afghan owns a kanat; another, a canal; a third, a flock of sheep; and the fourth, seven camels. Let them tell how they made their livings.

2. Tell about the king's plans.

THE LOW PLAIN OF THE INDUS AND GANGES

The land the rivers built. The low plain of northern India was built up with material washed down from the highlands on all sides of it. You can start at Calcutta and make a 2,000 mile journey up the Ganges, across to the Indus, and down to its mouth, and find never a stone as big as the end of your finger, unless it is one that man has carried there. The slow-flowing rivers of the flat plains do not carry earth particles as large as a stone. They carry only sand, silt, and clay; thus the soil the rivers make is soil that is easy to work. Here in this plain, chiefly in the well-watered Ganges plain, we find the great mass of the Indian people and most of India's large cities.

The lower Ganges Valley is a land of heavy rain, of tangled forests, of many rivers flowing through wide deltas, of villages on the muddy banks of muddy



© Publishers' Photo Service

Fig. A. Read the paragraph "The Upper Ganges Valley" and then tell what this picture shows.

rivers. There are many mosquitoes and other insects to bother man. Here crops can grow all the year; millet in the dry season, and many crops in summer. In the delta, some coconuts, sugar, and bananas are grown, but the chief crops of this moist flatland are summer crops. They are two great water crops — rice, grown in paddies (ponds), and jute. Jute is a tall, reed-like plant that grows in water and yields a fiber from its stalk. Jute is the cheapest of all fibers and is used for making bags or gunnysacks. Jute carries to market the coffee of Brazil, the walnuts of California, and the food for the dairy cow of New England and old England. Jute is one of the great exports of India — raw jute for the mills of Europe and the United States, and jute cloth for the farmers everywhere.

Calcutta rivals Bombay for being the most populous city of India. This great city of the Ganges delta is a seaport, with great exports of jute and many factories making jute cloth and other products.

The upper Ganges Valley. From the rainfall map, discover the reason that the farmers west of Patna have the habit of irrigating their fields. Here the land is flat. Look across the plain in almost any direction, and you will see half a dozen or more pairs of oxen walking down the inclined plane by a well (Fig. 252-A). As the oxen walk down the slope, the rope over the pulley lifts a heavy bucket of water; the man at the well empties the bucket into a little canal that carries the water to irrigate a few acres of land where wheat, millet, oil seeds, and sugar cane are grown. Thousands of these wells are used to irrigate the land in this flat plain. West of Lucknow the land becomes still drier, and there the farmers irrigate in part by large canals that carry water from the streams out upon the land, as we irrigate in the United States. On the banks of the Ganges stands Benares, a religious center and city of pilgrimage, and Delhi, the capital of all India. Tell about the summer capital (page 250).

The Indus Valley. The upper Indus Valley is called the *Punjab*; the name means "the land of five rivers." The Indus itself and four big branches flow from the Himalayas, where melting snow and summer rain make rivers rise in flood and carry great quantities of water out into the dry plain. Does this not remind you of Egypt? How? The Indus Valley is really the greatest of all oases, because here more people are supported by irrigation than are to be found in Egypt or in Iraq or in the lower Colorado Valley.

One of the largest irrigation enterprises. The valley of the lower Indus is called the *Sind*. In 1932, there was a great celebration at the little town of Sukkur, on the Indus near Shikarpur. The viceroy, British officials, native princes, and thousands of people gathered to celebrate the

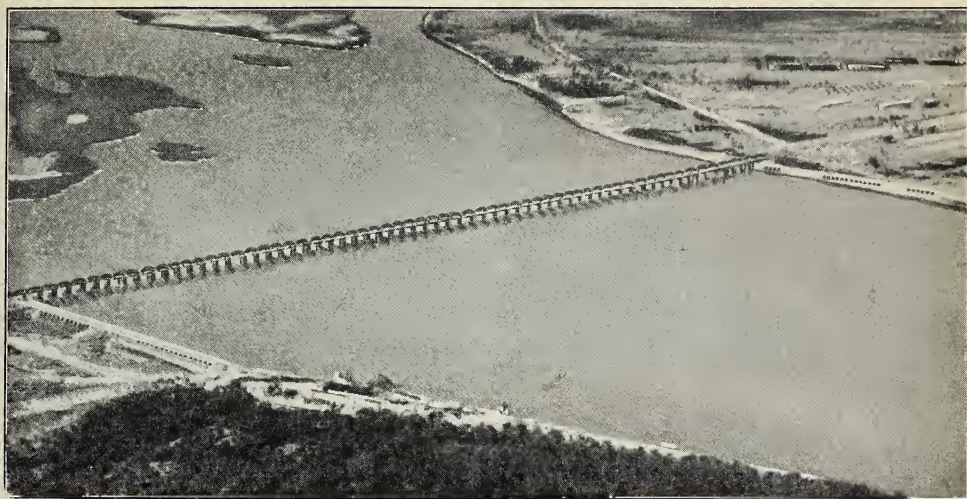


Fig. A. The great concrete dam, the Lloyd Barrage, about which you will read on this page. The Indus River here is a mile wide. At what season does it have most water?

opening of the Lloyd Barrage, a concrete dam nearly a mile in length, and built across the mighty Indus.

For eight years a few dozen British engineers and foremen and thousands of natives had been working in the cool days of winter and the burning suns of summer to build this great dam. The men worked with pick and shovel, with donkeys carrying sand upon their backs, with oxen moving dirt in scoops and carts, with steam shovels, with trucks, locomotives, and dump cars. Year after year the concrete mixers poured cement to make this great dam. When the dam was completed, two more years of work remained to be done to complete the canals that would carry the waters out upon the sands of the Thar Desert to make it green with crops and rich with harvests. From this one dam there are to be canals enough to reach from New York to San Francisco and back; three of them are wider than the Suez Canal. The canals will be crossed by 1,920 bridges and will carry water for a distance of 200 miles.

When this huge project is finished, water from the Himalaya Mountains will irrigate an area as large as Massachusetts and will make homes for 2,500,000 people — more than half as many as were in the United States when George Washington became President. The chief crops on these new farms will be wheat and millet, cotton, and sugar cane. Karachi is the port for the Indus and upper Ganges valleys. What influence do you think the Lloyd Barrage will have on its trade?

Ancient irrigation. The British did not begin irrigation in the Indus Valley. Great canals carried water from the Indus when the Britons roved the forests of northern Europe and knew not what reading was. Recently an archæologist thought he would like to dig around the ruins of an old monastery near the lower Indus. When he got to the foundations, he struck something that looked like an older wall. He kept on digging; thirty feet below the surface he came to the ruins of an ancient city, now called *Mohenjo-daro*. No one knew anything about it until the city was

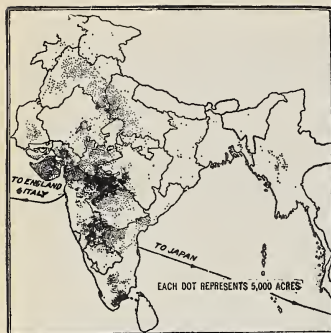


Fig. A. India's cotton acreage. See how it avoids the wet Ganges Plain.

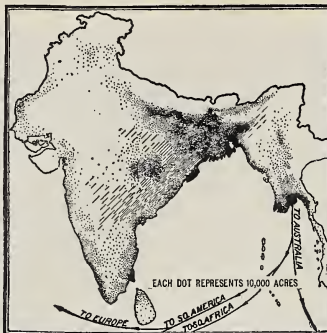


Fig. B. Acreage of India's rice, a wet-land crop.



Maps by U. S. Dept. Agr. show averages for a period of years.

Fig. C. Acreage of grain sorghum and pearl millet, drought-resistant crops.

dug up. It was 5,000 years old, so old that it had been completely forgotten. In this most ancient city they found things that had come from Babylon and Ur. The river had built up thirty feet of earth on top of the ancient city. The ruins of houses, streets, sewers, and public buildings showed that people must have lived there very much as people live today in cities on the banks of the Mississippi. It has been said that "history repeats itself."

THINGS TO THINK ABOUT AND TO DO

The Ganges Valley at a glance. From Figure 214-A draw a picture of the Ganges River. Write the names of the cities near the river; the names of the four crops along the lower river; the word "irrigated" where there is little rain.

The Indus Oasis at a glance. 1. From Figure 214-A draw a picture of the Indus River and its branches.

2. In their proper places, write the names: Punjab, Sind, Himalaya, Shikarpur, Thar Desert, Lloyd Barrage.

3. Below the diagram, print: the names of the winter crops; of the summer crops; of the irrigated-farm crops.

4. Name the season of most rain.

5. Give reasons for the building of the dam.

6. Give reasons why the valley is an oasis.

The sack comes alive. Pretend that a coffee sack can speak. Tell its story from the time it is a plant in India until it arrives in a grocery store.

THE INDIAN PENINSULA

The east coast of India — land of tanks.

The east coast of India has a low plain. It is a land of rice, millet, and oil seeds, but there is not quite enough rainfall to suit the farmers. In order to save water, thousands of dams, both little and big, were built across streams to make reservoirs or ponds called *tanks*. Tanks hold the water of the rainy season until the farmer can use it on his fields. There is also much irrigation by canals and some by wells. Madras, the third city of India, is the metropolis and chief seaport of the east coast. The city has tanneries that use hides from the plateau, and long ago it gave us cloth called *Madras cloth*.

The west coast. The west coast of the Indian peninsula is drenched by the heavy rain. This makes the low, narrow plains a fine place for rice. The low hills have plantations of pepper vines climbing on poles, and of plantains, a cooking banana, and of mangoes, a delicious fruit that grows on a large tree. The lower slopes have plantations of rubber and the higher slopes have plantations of coffee and tea. Those parts of the mountains not used for plantations are covered with forest, the home of the elephant, tiger, and many other wild animals.



Photo J. Russell Smith

Fig. A. At the right is one of the tanks about which you read on page 254. The big banyan tree and the two men are on the earth dam. At the left is a road below the dam.



Photo J. Russell Smith

Fig. B. This picture might have been taken almost anywhere in the plateau of Deccan for it shows a babul tree which grows in many parts of India and produces a bean good for cattle to eat, and the goatherds and their flocks.

The Deccan plateau. A long time ago as men count time, and a short time ago as the rocks count time, Nature poured lava out upon thousands of square miles of the plateau of the Deccan (Fig. 249-A). This lava has now decayed to make a soil that is rich and black, and which holds water very well. This is fortunate, because this part of India behind the Western Ghats has less rain than any other part outside the Indus plain. The great crops of the Deccan plateau are millets, grains that can stand dry weather, a little wheat in the northern part, and rice where water can be had to flood the paddies. Most of the grain is eaten by the people, but the farmers grow much cotton to sell.

Bombay, the second largest city of India, is the port of the Deccan and the middle Ganges. It is the chief cotton port and the greatest seaport of India. It is nearest to Europe, and the port to which the fast mail and express steamers sail. It has modern docks and railroads that reach out like widespread fingers of your hand. It has cotton factories, banks, slums, and the fine houses of the rich Hindu merchants and British rulers.

Hyderabad (in the Deccan) in a native state, is an interesting place because it is a city of the old India.

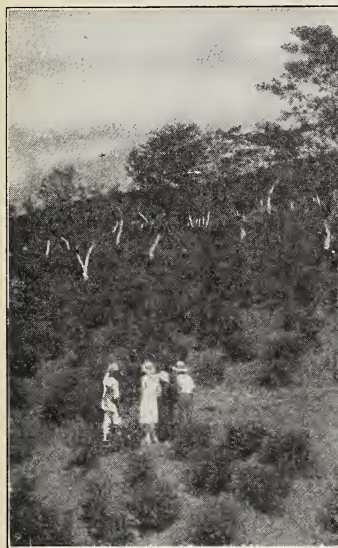
Famines. The rainfall maps of India shows the *average* rainfall. What is the average of 15, 20, and 25? Unfortunately there come years when the rainfall is much below the average. When this happens, the crops fail, there is little food, and famines come to a large belt of west central India, reaching from Delhi in the north, almost to Mysore in the south. Here, as in northwestern China, famine has come again and again for hundreds and hundreds of years, and people have starved by the thousands and even by the millions.

THINGS TO THINK ABOUT AND TO DO

Sort these pictures in three columns headed: Eastern Coastal Plain, Western Coastal Plain, Deccan Plateau.

| | |
|----------------------------------|--------------------------------------|
| Crops of rice, millet, oil seeds | Rice crops do well |
| Plantations of tea and rubber | Fruits — mangoes, plantains, bananas |
| Wheat and millet | Dry-weather grains |
| Not enough rain | Cotton for money |
| Dams across streams | Irrigated by tanks |
| Heavy rains | Water stays in soil |
| Plateau | Forests |
| Lava soil | Low Plain |
| | Wild jungle animals |

One big why: Why do people of India suffer from famines?



Photos J. Russell Smith

(Left) Fig. A. The tea planter and his daughter showing us part of his tea plantation in the hill country of Ceylon.

(Above) Fig. B. A hillside in the mountains of Ceylon planted with tea bushes, coconut palms, and rubber trees. Notice carefully the ditch in which the man is standing. During a rain the water, rushing down the hillside, is caught in the ditch, drops most of the rich surface soil it is carrying, and flows gently away.

TRADE AND PROBLEMS OF INDIA AND CEYLON

Investments, imports, and exports. India is very important to Great Britain. The government of India and the governments of many of the states have borrowed money from British people with which to build railroads and irrigation works. The hundreds of millions of dollars invested in irrigation dams and canals is mostly British money, and the interest on this money lent to India helps to support thousands of British families.

The Indian seems to wear few clothes (Fig. 246-B), but the breech cloth, worn by native men, is at least ten feet long and has more material in it than is required to make a shirt and trousers. The great population of India was clothed for a time largely in cottons from Manchester, England; this gave a great export for the British cotton mills. Of late years the people of India have bought some textile machinery from England and Germany,

and have erected cotton mills and started to manufacture cotton at home. There are large cotton mills in Bombay, Calcutta, and in many other cities. Cotton cloth and yarn are exported to Japan and China, while the mills making jute cloth furnish the greatest export of all India except for raw cotton, most of which is still sent abroad.

India also exports tea from the plantations on the hills of southern India, from the slopes of the Himalayas, particularly east of Darjeeling, and from the Khasi Hills, northeast of Calcutta. Other exports of India are skins, leather, lac (a gum for making varnish), some wheat, some wool, coffee, opium, and the cake left from pressing the oil out of peanuts and flaxseed.

The chief import is cotton cloth from Great Britain and some from Japan. Some woolen goods are imported. There are large imports of iron and steel, machinery, automobiles, instruments, hardware, drugs, medicines, and paper. These

come chiefly from Europe, with small amounts from the United States. Several hundred thousand tons of sugar from Java enter India each year at Calcutta, Bombay, and Karachi.

Problem of feeding the people. Before the British came, the people of the villages grew the food they ate, spun their yarn by hand, and wove cloth by hand. The village blacksmith made iron tools; the potter made pots; the cart maker made carts; the tanner tanned leather; thus the village was supplied with almost everything its people needed.

Famine once killed far more people than today, now that there are ways of moving food from one part of the country to another part. Railroads can now carry food to famine-stricken areas, if the people can borrow money to buy food, and sometimes the governments feed the people in times of famine.

As a result, the number of farmers has increased, the population has increased, but their *way of farming* does not improve as fast as the population increases. Most of the farmers still use the wooden plow that has not been changed since the time men lived in the buried city beside the Indus (page 253).

Government. The English say that they are giving the Indians a good government. It is probably true that during the last hundred years, because the British rule India, there have been fewer wars, fewer famines, fewer people thrown into prison without cause, less injustice in taxes, more trade, and more education, than in any other hundred years of India's history. Yet it is true that no people wants to be ruled by another people. Many people in India are trying to obtain self-government for India, such as that which the people of Canada and Australia have.

They will meet many difficulties if the

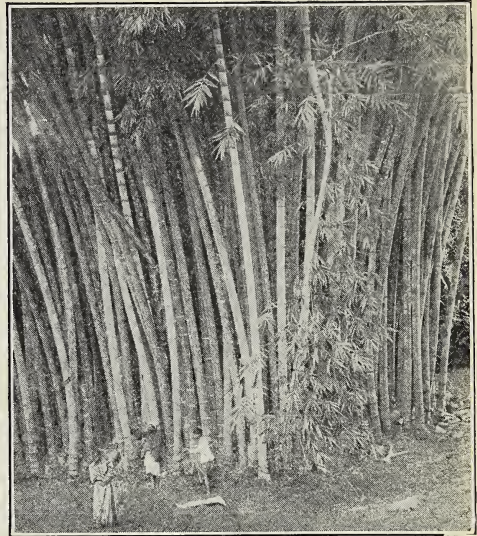


Fig. A. Giant bamboo grown as a crop in Ceylon.



Fig. B. On the mountain slopes of India feed great herds of Kashmir goats. Their long, silky hair, when woven into cloth, makes a soft garment of very fine quality and warmth.

British Government gives them the chance for self-government. Few of the people are educated. There are so many different languages and so many different races, and all will want different things. They will have difficulty in understanding one another. Some members of two great religions, Hinduism and Mohammedanism, cause their members to quarrel much with one another. Besides these differences, there is the troublesome *caste* system.

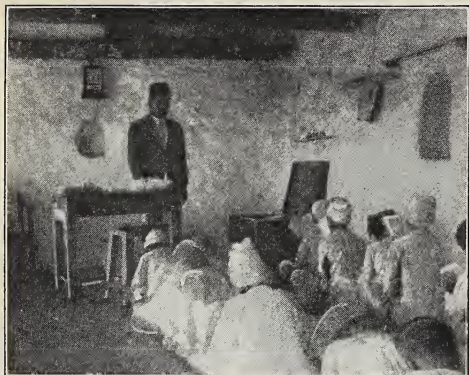


Photo J. Russell Smith

Fig. A. The boys in this room of a public school in India went right on with their lessons while I snapped their picture.

India is a country with many knotty problems to solve. You will find it interesting to watch for news of India as you read the magazines and newspapers that give foreign news. Once you begin, you will be interested to read news of all countries and peoples.

Ceylon. The *tear drop of India*, as the island of Ceylon is sometimes called, has an area of 25,000 square miles and a population of 5,300,000. Compare its size and population with the state in which you live. Ceylon has a government entirely independent of that of India, but the island is so much like southern India that we study it here. The only difference is that much of the land is held in large plantations by British owners, often companies. The manager of the plantation builds a village to house a few hundred laborers, whom he hires from the south of India to work for a season or two. Hundreds or thousands of acres are planted in tea, rubber, cinnamon, cacao, or coconuts; these crops make up the chief exports of the island.

Colombo is a port of call for ships bound to eastern Asia; it exports tea, rubber, copra, coconuts, and graphite for making lead pencils.

THINGS TO THINK ABOUT AND TO DO

New words and expressions about India. Write sentences about India, and try to use two of the following in each sentence:

| | | |
|---------------|-------------------|----------------|
| breech cloth | textile machinery | yarns |
| jute cloth | lac | opium |
| flaxseed cake | potter | factory system |
| tanner | spinning wheel | famine area |
| caste | Mohammedanism | Hinduism |

An export and import puzzle. Copy the following sentences and complete them by adding the correct countries or cities.

India imports sugar from

She has cotton mills at and

She exports cotton yarn to and

She imports cotton cloth from and

2. Arrange the following articles in "export" and "import" columns:

| | | | |
|--------------|---------------|------------|--------------|
| instruments | hardware | lac | wheat |
| wool | drugs | opium | automobiles |
| peanuts | jute cloth | iron | cotton yarns |
| steel | flaxseed cake | jute fiber | spices |
| cotton cloth | machinery | tea | skins |
| medicine | paper | sugar | leather |

For your bulletin board. Cut from the daily papers any articles you see that are written about India. Tell about these articles in morning exercises.

CHAPTER SUMMARY

A fill-in map game. 1. Let the best map artist in the class draw on the board a large map of India, Ceylon, Afghanistan, and Baluchistan. Let each pupil have a turn filling in the map: for instance, place (1) and a dot for Calcutta, then write in a key column "1-Calcutta"; place (2) →→→→ for the Himalayas, and write in the key column "2-Himalayas." Continue, using the place names learned in this chapter. Whoever misses a turn is "out"; whoever stays in longest, wins.

2. Using the key column, write in your notebooks something about each of the places shown in your board map; for instance, 1-Calcutta, east coast export city for jute cloth. When you cannot remember, copy a phrase from the text.

Where shall we go to see? Where in India shall we go to see thick jungles? circus animals at home? desert shepherds, etc.? Continue writing in a column strange and interesting sights in India. Pass your column to a neighbor and let him write in an opposite column the name of the place where the strange sight may be seen.



By Burton Holmes from Ewing Galloway

Fig. A. The great temples at Angkor (Angkor-Vat), Indochina, about which you will read on this page.

BURMA, SIAM, AND FRENCH INDOCHINA

☞ When you have finished this chapter, give a talk about the value of the lands that the rivers have built. See if you can bring into your talk some facts from India and China.

THREE COUNTRIES THAT ARE MUCH ALIKE

Build a map. Make a large free-hand map of Burma, Siam, and French Indochina (Fig. 215-A). Put on it four large rivers. Color their low valleys. Mark with initial a city near the mouth of each river. Print the names on these parts of French Indochina — Cochinchina, Cambodge (Cambodia), Tonkin, Annam, and Laos. Color the high lands.

Burma is ruled by Great Britain. For convenience in government it suits them to put it under the viceroy of India and call it a part of British India, but the country and the people and their way of

living are so much like those of Siam and Indochina that we shall study these three together.

Many kingdoms. If you studied the history of these countries, you might indeed say that of the making of many kingdoms there is no end. In Burma there are some great ancient ruins. In Cambodge, to the northwest of the city of Pnom-Penh, stand some most astonishing ruins of a great city. These famous ruins (Fig. 259-A), called *Angkor-Vat*, are the monuments of some great man or group of men who organized a kingdom, kept order, taxed the people, and made them work. But sons and grandsons who inherited the kingdom could not keep it going.

The history of this corner of south-eastern Asia shows dozens of great kingdoms that conquered, spread, and thrive



By Burton Holmes from Ewing Galloway

Fig. A. Find the Menam River in Siam (Fig. 215-A). This village is built right on the river a few miles north of Bangkok.

for a time, only to be followed by periods of many wars, killing, stealing, and general disorder. In 1886, in such a period of disorder, after the Burmese king had done terrible things, Great Britain took possession of the last of his land and annexed it to India. France also took possession of several kingdoms, which are now ruled in various ways as the French colony of Indochina. The kingdom of Siam has managed better and is still independent of foreign rulers.

The land and the peoples. What does the rainfall map of Asia (Fig. 56-A) tell you about the amount of water in the streams in the region that lies between India and China? about the natural vegetation here? What does Figure 6-A tell you?

On the physical map (Fig. 215-A), see how far apart are the Yangtze and the Mekong at their nearest approach to each other in the land that separates India and China.

What can you discover from the map about the direction of the mountain ranges in Indochina? Do the mountains

and rivers help to explain why it is that in Burma the people look somewhat like the people of India, and that some of the languages are related to those of India? The mountains and rivers help to tell why the people of French Indochina look like the Chinese. What actually happened was that people migrated from India into Burma; from China they came downstream into what is now French Indochina and Siam. There they mixed with the Malays who lived along the shore, and with many tribes in the hills.

Mountains and flood plains. Much of this region is mountainous. The heavy rains have washed soil from the mountains and with it have built up great flood plains in the valleys between. In summer, the season of the monsoon rain, these flood plains often become swamps, and in places even lakes. This is a difficult place in which to live, and many of the people, very naturally, live in houses set up on poles; many live in houseboats. The city of Bangkok has nearly a million people, of whom thousands have no other homes than boats. If they want to move,



Courtesy Caterpillar Tractor Co.

Figs. A.-B. Read the paragraph headed "Teak" and then tell about each of these pictures.

they just push the boat to a new place. Many of the boats are shops with goods to sell.

Two kinds of land—two kinds of living. In these lands of mountains and swampy flood plains, there are two entirely different ways of making a living, each on its own kind of land.

The hill tribes. Britain says that she rules Burma; France says she rules Indochina. But in both of these so-called European territories there are, in the mountains of the far interior, tribes of people who do not see an Englishman or a Frenchman from one year's end to the other. Some have never even heard of either England or France. Each tribe lives in its own little forested upland or valley, and has its own language and own ways of doing things. The tribes supply almost all their own needs from the forest and from their little gardens, grown in clearings. They may sometimes get a knife, beads, cotton cloth, or some other small European article that a trader will bring to them in exchange for skins, gum, or some other forest product that goes downstream in canoes or on rafts.

Teak. The forests of this part of the

world produce one of the important hardwoods of the world trade—teak, which is much used in shipbuilding. It comes in about equal quantities from Burma and Siam. The tree is killed by cutting a ring of bark away from its base. In two years the tree dries out enough to float. It is then felled and dragged to a stream bank by elephants or teams of buffaloes. This is a rainy-season job because the logs slip better on the muddy earth. When the monsoon rains fill the streams, the logs are floated down. Often they lodge in the stream and must be started on their way again the next year. Sometimes it takes them five years to get down to the steamer at Bangkok, Saigon, or Moulmein. Kipling says that one may see

"Elephants a-pilin' teak

In the sludgy, squdgy creek."

The flood-plain men. The flood-plain man is usually a rice grower, for these flood plains are natural rice land. In some parts, the stream rises naturally to flood the paddies. People depend upon their streams to lift the water rather than having to do it themselves by the laborious ways that the Chinese use (page 223). Rice, and the plentiful supply of fish in



Courtesy India State Railways

Fig. A. Some of the "flood-plain men" transplanting rice in southern Burma during the monsoon.

the streams, make easy living on the flood plains, but this system of irrigating by Nature makes it a bit uncertain. If the river rises too high, it drowns the rice; if it does not rise high enough, the crop is short because of scanty water. Nevertheless, this region, with its large amount of land and its small population, has become the greatest rice export region of the world. Shipload after shipload goes to Europe, Japan, and sometimes to China, from the four ports near the mouths of the four rivers with the four flood plains that are natural homes of rice.

Petroleum. Burma has an oil field with a pipe line to Rangoon. The oil wells are drilled with American and European machinery, operated by Americans and Europeans aided by many native helpers.

The immigrants. The people of Indochina are not very fond of jobs where they have to work all the time. This does not suit European industry very well. Since the Europeans have come, they want workers for steamboats on the rivers, for railroads, for rice mills in the cities, as

dock laborers, and as clerks in offices and stores. For this work, thousands of people have come from India; still more have come from China. Indeed, most of the industry and trade, other than growing rice and timber cutting, is in the hands of Europeans, Indians, and Chinese — especially Chinese. These people are all willing to work at a steady job.

In ancient times the Chinese came overland into the back door of this region; now, like the Indians, they come by ship to the front door. If they keep on coming long enough, these countries will become more and more like China and India.

Independent Siam. The government of Siam is interesting. The country is independent. It is ruled by a king, assisted by a cabinet and Supreme Council of wise men in whom the people have confidence.

If you talk to an Englishman about the government of India, he will say that the people cannot possibly govern themselves without the help of the English. He will point out, too, that English experts



© Ewing Galloway

Fig. A. This kind of sedan chair in northern Siam is called a *hamm*. It is used for foreigners and as an ambulance to take the sick to the mission hospital.

are helping in every department of the Indian government, although most of the people employed by that department are natives. If you go to Siam, you will find it is just the same way. When the Siamese want an expert man to take care of their forests, to be chief engineer of their railroads, or to manage their post office or finances, they send to Europe or the United States, and *employ* a foreign expert. For years the son-in-law of President Wilson was an expert in the employ of the Siamese government, making treaties with foreign governments. Siam, independent in the midst of colonies, will be another interesting country for you to watch as you keep up your interest and read more about foreign lands.

THINGS TO THINK ABOUT AND TO DO

Important why's. 1. Why did England take Burma?

2. Why is Siam independent?

3. Why do people of French Indochina and Siam look like the Chinese?

4. Why do Burmese look and talk like the people of India?

5. Why is there heavy rain in these countries?

6. Why are there swamps?

7. Why do European owners of rice mills, railroads, and steamboats use foreign labor?

8. Why do Siamese invite foreigners into their country?

Suppose. 1. Suppose you belong to a hill tribe: write or tell how you feel toward white men; how you supply your needs; how you earn money from white men; how you trade with them.

2. Suppose you live on a flood plain: write or tell what food you eat; what kind of house you live in; what work you do; how your fields are irrigated; how you earn money.

3. Suppose you are a foreign expert employed by the Siamese government: write a letter to your friends at home.

An interesting comparison. Copy and fill in the following table to show how India and Indochina are alike, and how they differ. Perhaps you can make the table longer by finding other ways in which they are alike or different:

| | BURMA | SIAM | FRENCH INDOCHINA | INDIA |
|--------------------------|-------|------|---------------------|-------|
| Size..... | | | | |
| Mountains.... | | | | |
| Rivers..... | | | | |
| Rainfall..... | | | | |
| Ruled by..... | | | | |
| Races and languages..... | | | | |
| Farm work.... | | | | |
| Trade..... | | | | |



Photo by Wm. H. Koenig

Fig. A. The Malay, or brown man. See his knife, his bag of rice, and his bamboo "suitcase." The strong, hooked knife is very useful to the forest farmer.



Photo by Wm. H. Koenig

Fig. B. The fuzzy-haired black man about whom you will read on this page. He lives in Papua. He does not need many clothes, but see how he decorates his boat.

THE MALAY PENINSULA, THE EAST INDIES, AND THE PHILIPPINE ISLANDS

☞ You will find in this study new and fascinating material. Take notes as you read, and later invite company to hear talks on topics such as, "Good and bad about volcanoes," "How we travel in this island world," "Eating and sleeping," "Getting a living," "Exchanging goods," "Shall we develop manufacturing?"

LAND, PEOPLES, KINGDOMS, AND COLONIES

The map of an island world. Thousands of islands dot the sea between Asia and Australia. Find the names of five of them (Fig. 264-A). What are the area and population of Borneo (Appendix)? of the state of Texas? of Sumatra? of Java? How far west would the island of Sumatra reach, if one end were placed at New York

City? If the isthmus that connects the Malay Peninsula with the mainland were 110 feet lower, the peninsula would be an island. The Malay Peninsula is so much like the East Indian Islands that we shall study about it also in this chapter.

Green lands. The East Indies lie in a zone of heavy rainfall. You will find here no desert and very little grassland, because nearly everywhere there is enough rain to make a forest. The trees are always dark green in color. As they drop one leaf, they grow another. The East Indies and the Philippines might well have been called the *Green Archipelagoes*.

Black men and brown men. Experts who have studied the matter very carefully are sure that a black race whose hair

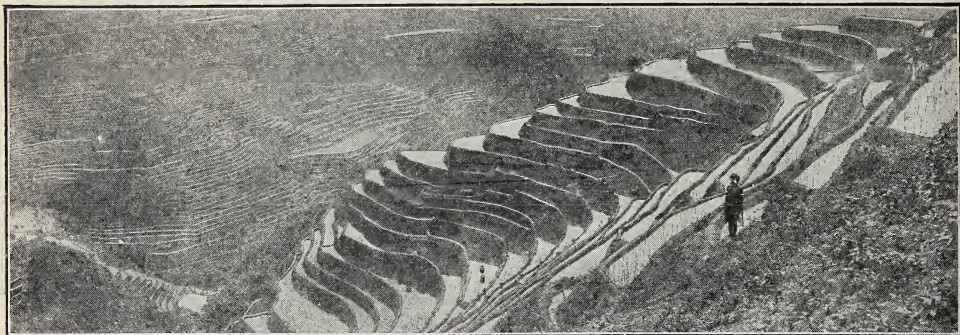


Fig. A. A remarkable system of terraced hillsides, planted with rice and flooded, in the mountains of northern Luzon, Philippine Islands. This is the land of the Igorots. Would you call people savages who can farm like this?

was fuzzy once lived on all the shores of the Indian Ocean. This was before the people who came out of Central Asia took possession of India.

A long time ago, we cannot say just when it happened, some brown people, who are called *Malays*, got into their boats and came to the western part of this island world. Some think that these people had an earlier home in Sumatra, and that they have some Mongolian blood in their veins. Long ago they were skilful boat people, and scattered themselves from Madagascar to Japan.

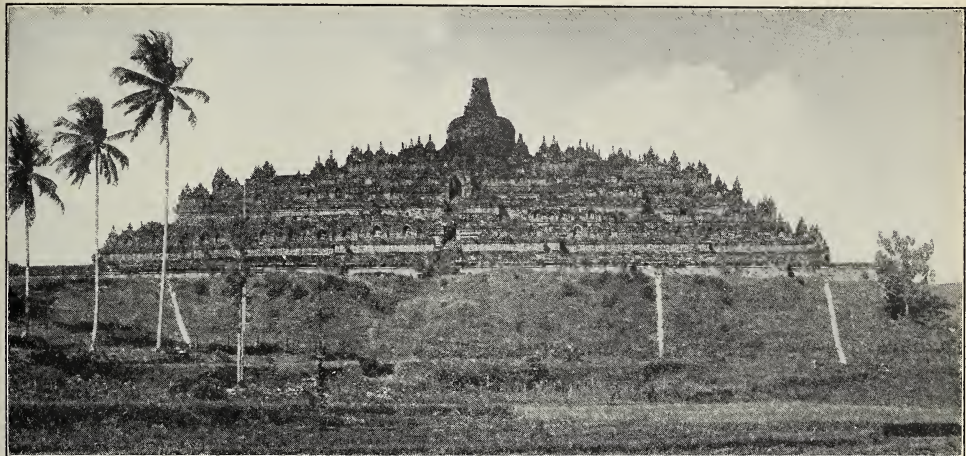
These Malays now live on the shores of the Malay Peninsula and on all the islands west of Papua. On Papua and the islands east of it, fuzzy-haired black men (Fig. 265-B) still live.

The hill people of the interior. When the Malays took the shores, the black men fled to the hills. We still find a few of them in the hills of the Malay Peninsula, in Sumatra, and in four of the larger Philippine Islands. They are called *Negritos*, and are less than five feet in height. In the warm forests few clothes are needed; so the Negritos wear almost none. Their feet are bare and they have such control over the muscles of their toes that they can use them almost as well as you use your fingers.

The Negritos have no fixed homes. They move about in groups which consist of a few families. Instead of houses, they live under shelters of leaves or bark or skins. For food they dig roots, gather wild fruit, hunt, and fish. They are very expert with the bow and arrow, and can throw stones almost as accurately as a man can shoot with a rifle. They can make a fire in the wet forest in a few minutes with two pieces of dry bamboo. Their way of living shows us how men lived ages ago when all of the world's people were primitive peoples. Sometimes they are called *food gatherers*.

Barabudur. In central Java is a great ruined temple called *Barabudur*. It is one of the wonders of the world. If the statues and reliefs carved on the walls of this temple were put side by side, they would reach three miles. How did this temple come into being? Its carved figures tell the tale.

Hundreds of years ago, boatloads of people came from India; some say this happened in the 600's, some say it was later. Perhaps the people were fleeing from invaders who came into India from Central Asia. They came, bringing the culture of India. They chose good land, started rice culture, and made several large kingdoms.



© Ewing Galloway

Fig. A. The great ruined temple called *Barabudur* about which you read on pages 266 and 267.

There are many ruins, of which Barabudur is the greatest. The three miles of carvings around it tell the story from bottom to top of man's ascent from earth to heaven. At last the figure says, "Fear not; all is well."

The Arabs and the Europeans arrive. About the time that Columbus came to America, Arabs sailed into eastern Java, took the Indian kingdoms, and introduced the Mohammedan religion. Soon after this, the Europeans came. They came to trade; especially did they come for spices, nutmegs, cloves, cinnamon, allspice. For a long time the islands were called the *Spice Islands*. The Europeans got into wars with the native rulers, and now Java, Sumatra, Celebes, two thirds of Borneo, half of Papua, and the many small islands in between, belong to Holland and are called by the Dutch *Netherland East Indies*; by the English, the *Dutch East Indies*. Portugal owns half of the island of Timor; Great Britain, the United States, and Australia govern large areas in this island world.

THINGS TO THINK ABOUT AND TO DO
Reward the best map maker. 1. Let

each pupil draw or trace and cut out a map of one of the larger land bodies in this lesson: Malay Peninsula, Sumatra, Borneo, etc.

2. Let every pupil use the same scale: the scale in Figure 264-A or one much larger.

3. Hold your maps before the class and have the class guess the name from the shape of the cut-out.

4. Choose the best map of each land form and paste the cut-out maps in their proper positions on a piece of dark paper.

5. Color your map to show mountains and plains. Draw the Equator and parallels 10° N. and 10° S.

Food gatherers. Write a paragraph about Negritos, using this outline: their appearance, clothes, homes, food, work, tools.

Five masters. Five masters have owned these lands at different times. Write the names of these masters in the order in which they owned the lands. Below are jumbled statements about these five owners. Copy them in five groups.

They fled to the hills. They came to trade. They brought the Mohammedan religion. They brought rice growing and the culture of India.

They sailed from Madagascar to Japan. They are found on all these islands. They have some Mongolian blood. They may have been fleeing from invaders of Central Asia.

They conquered Indian kingdoms. They live now in Papua. They live on all the islands as far east as Papua. They now own the islands.



Photo Wm. H. Koenig

Fig. A. Look at this picture several times as you read the paragraph "Java and the Volcanoes." In the picture you are more than two miles above sea level in Java. You can see Mt. Bromo (steaming); Mt. Batok (cone shaped); and Mt. Smeroe in the far distance.

DUTCH AND BRITISH POSSESSIONS

A useful table. Make a table to show the area, population, and population a square mile of: Java and Madoera (Madura); Bali and Lombok; Sumatra; all of Borneo; Celebes; Iowa; France. In the year 1810, Java had about four million people. What fraction is that of the present population? Do you find another state or another country in all the world with so many people a square mile as in Java and its little neighbor, Madoera, which is politically a part of it? Why so many people? Find the answers as you read.

Arab rule. The Arabs were not good rulers. When the Dutch came, they found Java and the other East Indian islands ruled by little chiefs or sultans who were at war with one another much of the time. Indeed, head-hunting was a kind of sport. When a man had killed another man, the killer was careful to dry the

head and hang it up in his house as a trophy, just as an athlete might display a cup or a medal. You can easily guess that head-hunting has a bad influence on the number of people in a given country.

Dutch rule. When the Dutch took possession, they did not disturb the local *form of government* to any great extent. They kept the peace and made the people work. The sultans are still there, but somewhere near to each sultan is a Dutchman who "advises" the sultan as to what he can and what he cannot do. The word of the Dutchman is obeyed. The Dutch "adviser" does not make much show, but the sultans live in splendor, more splendor than in the old days, because the Dutch introduced European industry. The people were not killed off then, and the industry provided plenty of food; so the population increased and the sultans became rich.

A productive climate. The East Indies have a climate that makes plants grow. In this region it rains most of the year (Fig. 56-A); great droughts do not come to bring famine. Frost is unknown; plants grow throughout the year; therefore it is easy to produce a food supply if there is good soil.

Java and the volcanoes. The soil of Java is volcanic. The cone-shaped mountains can be seen in almost all parts of the island; often several are in view from one place. In the Strait of Soenda, which separates Java from Sumatra, is Krakatoa. It may be considered the master volcano of the world, so far as man has been able to observe.

In 1883 there came a series of eruptions. When they began, the island was from 300 to 1,400 feet high and it covered 18 square miles. At the end of two or three days the sea was 1,000 feet deep where the island had been. The entire island had been blown away. The explosions were heard for 2,000 miles. The force of the explosion threw the ocean into waves 50 feet high, which hurled themselves upon the near-by shores and drowned people by the thousands. This one eruption killed 36,000 people.

Cubic miles of earth and stone were blown to dust and thrown miles high into the air. People who lived 150 miles away had to light their lamps at midday. Sunset skies were brilliant for months in all parts of the world, from this volcanic dust. But most of the dust of course fell near by, and most of Java got a good coating. In this way Java has been made with new stuff thrown out by volcanoes. There is no finer soil in all the world, and that is another very important reason why so many people live in Java.

The habit of working steadily. There is still another reason for the large popu-



Photo Wm. H. Koenig

Fig. A. This picture was taken on the west coast of Sumatra. It gives an excellent idea of what the forested hill land of the tropics looks like.



Courtesy Caterpillar Tractor Co.

Fig. B. This picture might be called "Modern Methods in the East Indies." The big tractor came from America and is pulling a plow on a sugar-cane plantation in Java. See the height of the cane.

lation of Java. The people were already used to farm work and to living in villages, when the Dutch came. Barabudur shows that. The Dutch government controls industry and has made the people work to some extent and to take care of themselves. The foremost export of the island is sugar, made very scientifically in sugar mills owned by the Dutch.

In the Philippines and Cuba the same tract of land may be in sugar for five or ten years; the plantation workers buy their rice from Siam or Burma. But in Java the law is that sugar must stand only one year; the land is then used two years



Photo Wm. H. Koenig

Fig. A. A Malay home in Sumatra, shaded by coconut palms and surrounded by rice paddies.



Photo Wm. H. Koenig

Fig. B. Many people in the East Indies prefer to build their houses on poles over the water to avoid insect pests and danger from wild animals.

for rice. Because of this plan, the people have food without depending upon a foreign market to provide it.

The villages of the plain. In most parts of Java the plains are dotted with villages, most of which are surrounded by a row of bamboo trees. Each bamboo house is

surrounded by its own bamboo fence and is shaded by palms, beautiful mangoes, and other fruitful trees. The land about the village is tilled as carefully as are the lands of China.

Plantations on the hills. There are cultivated terraces on the hills and also great plantations much like those of Ceylon — plantations of tea trees, coffee trees, rubber trees, and cinchona trees. The rubber is of the species called *Hevea brasiliensis*, because it came first from the Amazon Valley. The cinchona tree, whose bark gives us quinine, grows wild on the east slopes of the Andes Mountains, where wild trees for a time furnished the world's supply of this valuable bark.

The Dutch transplanted the tree to Java. They have found that the species having the best bark is a weakly variety. They plant, instead, a stronger variety whose roots are vigorous, and they graft the strong young tree with the weakly variety that produces the better bark. This is an example of the painstaking and scientific care with which the Dutch manage Javanese agriculture.

As the number of people increased, more land was needed for crops, and the people cut down the forest and made new fields and villages. Yet the forests remain large enough to be the home of the wild elephant, the tiger, and the rhinoceros.

Other islands ruled by the Dutch. Bali and Lombok are neighbors to Java, and much like it in nearly every respect.

Does Sumatra have many people? See your table. Much of her land is forest-covered mountain, with hill tribes far away in the interior. In the northeastern plain are plantations owned by European companies. The Europeans grow much fine tobacco, with the aid of laborers from China, India, and Java, especially Java. Imported workers also care for rubber

plantations, miles of them, owned by American tire manufacturers. There are some coffee plantations; some coal is produced, and there is an oil field, operated, of course, by Europeans and Americans. Off the coast are Bangka and Belitoeng, two small islands with important tin mines. These mines are worked by Chinese laborers, and produce an important export.

The soil of Borneo is not nearly so good as that of Java. It is not volcanic. Much of the surface is steep mountains; much of the remainder is flood plains, whose soil was washed down from the mountains. The plains are flooded at the season of heavy rain. It is difficult to make a farm on the mountains or on the plain, but by much labor the plains could be made into a great rice land.

The coast lines of East Indian islands are made beautiful for thousands of miles with the graceful tops of overhanging coconut palms. It is easy for the native to gather coconuts, put them in his little boat, and sail or paddle with them to some market. At Makassar, in Celebes, there is a great European-owned coconut mill, where oil for the European market is crushed from nuts brought from great distances by native boats and steamers that skirt the islands.

Celebes, with its very peculiar shape, really consists of many mountain ranges that seem to have sunk into the sea far enough to have the ocean cover most of the low plains that once surrounded them.

The Dutch part of Papua is twelve times as large as the mother country of Holland. Like the British and Australian parts of this island, it is almost unexplored.

Raffles enlarged the British Empire. In the old, sailing-vessel days, all ships going from Europe or America to China, Chosen, Japan, and the Philippines sailed around



Photo Wm. H. Koenig

Fig. A. The lower right corner of this picture gives a very good idea indeed of a terrace in the hilly lands of the East Indies. Give a climate reason and a population reason for terracing hillsides in these warm lands.

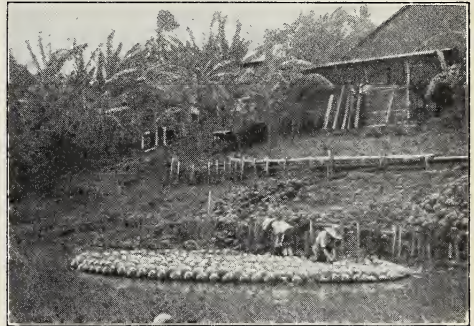


Photo J. Russell Smith

Fig. B. In this picture find the raft made of coconuts, two men husking coconuts, the copra drying house, and the grove of coconut palms and banana plants.

Africa and passed through the Strait of Soenda. Soon after steamships were invented, Stamford Raffles, a British naval officer stationed in the Far East, saw far enough into the future to know that the strait between Sumatra and the Malay Peninsula would become important and that Britain should have a station there. Said he, "I will go take the island of Singapore."

He went there and made a treaty with the native sultan, paid him money, raised the British flag, and took possession of the island in the year 1819, in the name of the



Fig. A. A well-kept rubber plantation in the East Indies. Tell what the native is doing.



Fig. B. The Malays in the picture work on a rubber plantation. They are carrying latex from the trees to the factory where the crude rubber is made.

king of England. British power increased.

Sultans and advisers. The Malay Peninsula has at least a dozen native sultans. These sultans are now subject to the British, who manage to rule the whole peninsula through "advisers," much after the manner of the Dutch on the near-by islands.

Singapore. Raffles was right about future trade. Singapore has become a great British trading city. In the center

of Singapore is Raffles Square. In the center of the square is a bronze statue of Sir Stamford Raffles, whose bold action shows one of the ways by which the British Empire has grown.

Singapore is the metropolis of the East Indies and of southeastern Asia, because a multitude of sea routes meet at that point. Today, dozens of ships of the great steamer lines of the world stop at Singapore on their way to the six continents. As feeders for the great steamers, there are flocks of small steamers, motor boats, sailboats—native boats of many shapes and sizes. They all carry goods and passengers between Singapore and Siam, the Malay Coast, and a thousand ports, little and big, in the East Indies and the Philippines. Singapore merchants collect and export tin, spices, rattans, gums, woods, and other tropic produce, including animals for the zoo. A tiger in a Singapore back yard gave me a sharp surprise as he sprang at me.

Plantations, Malays, and Chinese. Singapore is the world's capital for crude rubber. This is partly because of the plantations on the Malay Peninsula. In many places pineapples are planted in the young rubber plantations where, for two or three years, they yield crops of that fine fruit. Singapore thus became a great center for canning pineapples, and a shipping center for rubber from Java, Sumatra, and the peninsula.

The native of the Malay Peninsula cannot be hired to work for money. He has no need for the things that money will buy. He is contented if he catches a few fish; his wife raises rice and vegetables in the garden, and they have a little surplus to sell. The money so gained buys the few things the Malay wants; so he swims, paddles about in his canoe, and sits in the shade while the Chinese work.



© Ewing Galloway

Fig. A. A native house and dugout on the Booleogin River in northeastern Borneo. Banana serves as bread; coconut oil as butter; palm leaf as house wall and roof. Why work?



© Ewing Galloway

Fig. B. The bay and port of Gorontalo, Celebes. What products will the ships in the harbor carry away from this queer-shaped tropic isle?

Chinese laborers do nearly all the work in the Malay Peninsula, including the rubber, coconut, and pepper plantations, and tin mines, which are much like those of Bangka and Belitoeng. The Chinese also run nearly all the retail stores. They save money and often buy land with it. Chinese now own many large rubber plantations. There are many rich men among their number, for the Chinese are not only good workers, but also good business men.

THINGS TO THINK ABOUT AND TO DO

Add to your fill-in map. Use initials to locate:

| | | | |
|-----------|----------|-----------|--------------------|
| Madoera | Bali | Lombok | Straits of Soenda |
| Krakatoa | Siam | Burma | Bangka |
| Belitoeng | Makassar | China Sea | Straits of Malacca |
| | | Singapore | |

Draw blue rings around initials showing Dutch possessions; draw red rings around those showing British possessions.

Important words and expressions. 1. Use the following in sentences about the government of the East Indies: sultans, splendor, head-hunting, trophy, Dutch adviser, British adviser, tribal wars.

2. Use these in sentences about soil and climate: frosts, droughts, volcanic dust, lava, eruption, flood plains, regular rainfall.

3. Use these in sentences about crops and

farming: *Hevea brasiliensis*, cinchona, scientific care, sugar must stand only one year, cut forests, plantations, coconut palms, graft strong trees.

Mind reading: what or where? Answer with the names of places in the East Indies:

1. I'm thinking of a dangerous volcano.
2. Of Dutch sugar and rice plantations.
3. Of farms like China's.
4. Of plantations of tea, coffee, rubber, and cinchona.
5. Of a pineapple-canning city.
6. Of bamboo houses shaded by palms and fruit trees.
7. Of two small islands near and like Java.
8. Of tobacco fields owned by Europeans.
9. Of rubber plantations owned by Americans.
10. Of two islands with tin mines.
11. Of an island whose soil is stony or swampy.
12. Of an almost unexplored island.
13. Of an English trading port.
14. Of two straits for trading ships.
15. Of the world's largest crude-rubber city.

Riches. Copy and fill in the following outline with names of the riches of the Indies from farm, sea, plantation, forest, and mine.

| DUTCH | | | | | BRITISH | |
|-------|----|----|----|----|---------|-------|
| J. | S. | B. | C. | P. | S. | M. P. |
| | | | | | | |

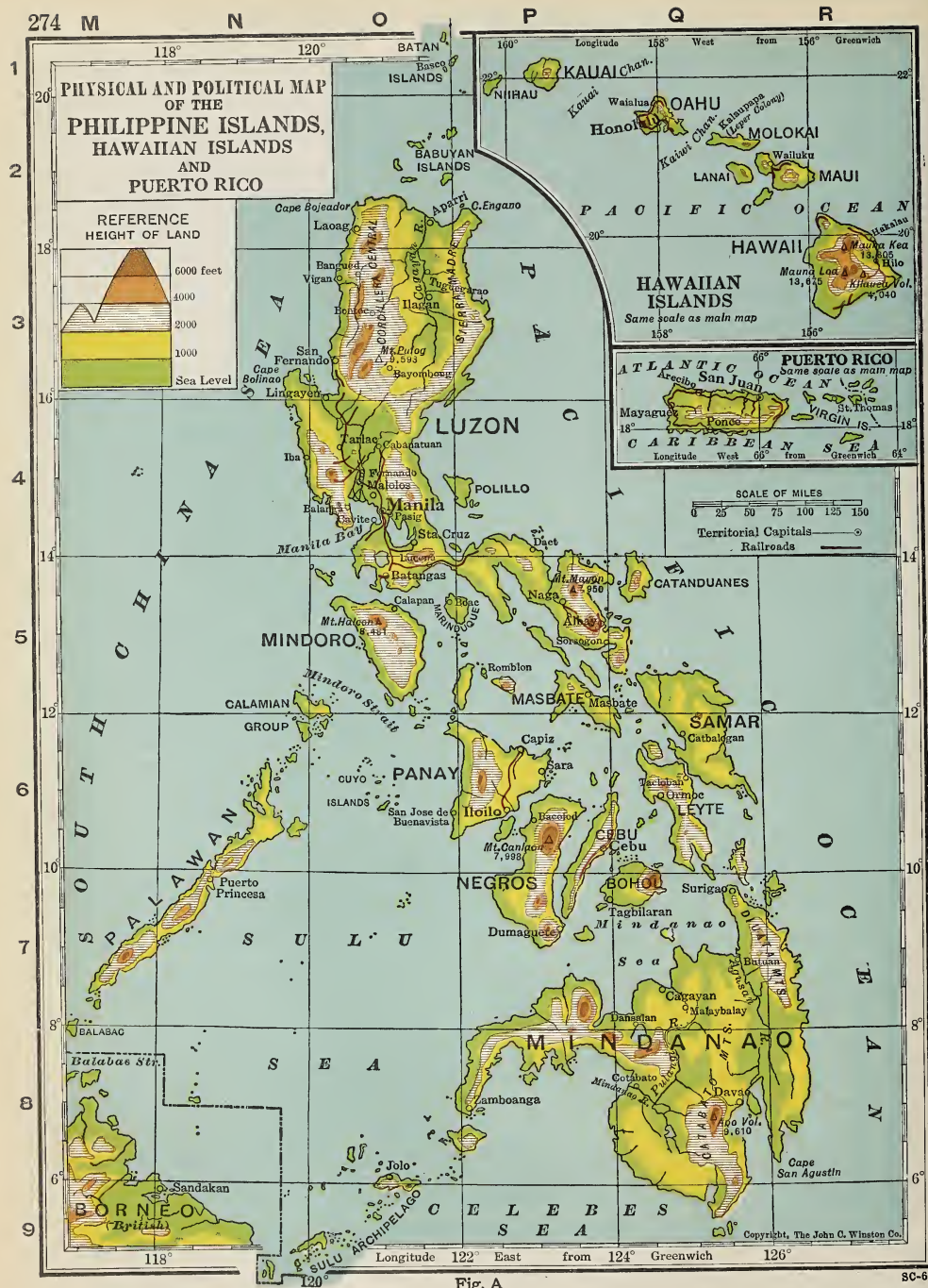


Fig. A



Fig. A. The carabao (water buffalo), the chief beast of burden in the Philippines, has lost his job—the big tractor is pulling a disk plow through swampy rice lands.

☞ Map comparison. On Figure 274-A, measure a triangle with the corners on the three most widely separated points in the Philippine Archipelago. Find places exactly those distances apart: first, somewhere in North America having the same latitude; second, somewhere in the United States.

THE PHILIPPINES

The Philippine peoples. Most of the people of the Philippine Islands are brown people of Malay stock. They came, it is supposed, from Sumatra so long ago that no one can say just when it happened. It seems that waves of Malay peoples came at different times, because there are forty-three groups of people whose languages are different, though somewhat alike.

The Tagalogs occupy Manila and the land around it, including the great plain of central Luzon. Tagalogs are much more highly civilized than many other peoples of the Eastern world. The Spanish took possession of the country soon after the discovery of America. The Tagalogs learned to speak Spanish and many adopted the Christian religion. The

Spanish married with the Filipinos, and the mixed race called *mestizos* have long been leaders in the island.

At the extreme south are Mohammedan tribes called *Moros*, who differ from the Tagalogs as much as the American Indians differ from white people. There are also many thousand Chinese in the islands, who do most of the trading and own most of the retail stores.

American rule. The Philippine Islands became an American possession in 1899, after the war with Spain. The United States has given the islands a good government. It has given the people education. Indeed, the islands probably have more people who can read and write than all the other East Indian islands combined. There are two universities in Manila. Many intelligent Filipinos go to the United States and to Europe to study. The neatest, cleanest school children I ever saw were in the schools of Manila.

The Philippine legislature makes most of the laws for the country and the Filipino people are as free today as are the



Fig. A. The beautiful new building in which the Philippine legislature meets.



Photo J. Russell Smith

Fig. B. The buffalo carts are hauling cargo to and from the canal in Manila.

people in any state in the United States. In 1945, however, the Philippine Islands will be an independent nation—the *Republic of the Philippines*. In the meantime, imports from the Philippines to the United States will continue to pay lower duties than goods from other countries. The Filipinos will lose this advantage when they become independent.

Luzon and Manila. Much of the surface of the Philippines is mountainous, but Luzon has several plains and much volcanic upland soil. Luzon is one of the finest islands in the whole East Indian world. Manila is on the edge of the great plain

of central Luzon. It has a good harbor and more people than any city between Baltimore and New Orleans. There are many steamship lines which connect Manila with smaller islands. This great city has many wholesale stores and factories which make articles for local use. It has coconut-oil mills and cigar factories making products for export.

Farms and trade. A great many of the Philippine people are farmers. Most of them own their own little farm, live in a house of bamboo with a grass roof and perhaps grass walls, shaded by the fruitful mango tree, and surrounded by a garden where bananas, sweet potatoes, beans, and other vegetables grow.

The Filipino women do much handwork in their farm homes. Different neighborhoods have different specialties and they trade with one another. Some make hats much like Panama hats; some weave cloth on hand looms; many do embroidery.

Some farmers have a tract of abaca plants. Abaca is a cousin of the banana. Its value is not in fruit, but in the long, strong fiber of its leaf stalk. The fiber is called *Manila hemp*. A man can go out, cut a few abaca leaves, and strip some hemp. This he can do by himself, and he can work for an hour or a week, just as he wishes. The fiber makes the best of rope. When the rope gets old, it can be made into strong Manila paper.

There are forests of coconut trees; the coconut palm rivals sugar cane in furnishing the chief export of the islands. From the coconuts come coconut oil, copra, and the shredded coconut you find in candy, pie, and coconut cake. Some of the dried coconut meats (copra) go elsewhere to be crushed to obtain oil. The sugar plantations send shiploads of sugar to the United States and other countries. Manila hemp is a leading export. There is also an export

of tobacco, cigars, and some wood. The chief imports are cotton and cotton cloth from the mills of America and Europe, iron and steel, machinery, automobiles, flour, paper, and a thousand little things in small quantities.

The warm islands of the Far East produce a few raw materials and use *many* manufactured articles. How does their prosperity help the people who live in lands where manufacturing is developed?

THINGS TO THINK ABOUT AND TO DO

Guess. Write in a left-hand column a list of peoples who live in the Philippine Islands. In a right-hand column write a definition of each: as, Malay — brown people who took the islands long ago, etc. Now cover the left-hand column and see if the class can guess the people from your descriptions.

Add to your map. Add Manila, Luzon. Draw arrows to and from Manila; on them write names of the biggest imports and exports.

A debate. Divide your class into two groups, appoint judges, and debate the question: "Should the Philippine Islands have their independence?"

Products and uses. 1. List the uses of: mangoes, abaca, coconuts.

2. List some manufactures of the Philippine Islands.

CHAPTER SUMMARY

Make a trip. 1. Make a trip from your home to the East Indies, tracing the trip on a world map, and naming all the bodies of water through which you pass.

2. Put on the map the names of all the places at which you would like to stop.

3. At each stopping place have a lecturer to tell what you see.

An east and west review. Recall what you learned about the West Indies.

1. Have the "West Indies" group make statements about their islands; as, "They lie mostly in the torrid zone."

2. Have the second group match each statement with one about the East Indies.

3. If either group fails to match three statements, the sides change and the second group become the challengers.

An East Indies dictionary. How many "A" words can you name and define, that



Photo J. Russell Smith

Fig. A. Hat making is a "home industry" in the Philippines. The little girl at the right was more interested in my camera than in the hat she was making.



Photo J. Russell Smith

Fig. B. My son at the left in the picture is holding a coconut palm leaf in order to show you how large the leaf is. Coconut trees are in the background.

name places, products, or conditions in the East Indies? "Abaca," "automobile," give you a start. Have each pupil work on different letters, then combine work into an "East Indies Dictionary." Mount on big sheets of paper for your bulletin board. Try to cut out or draw pictures to illustrate your dictionary.

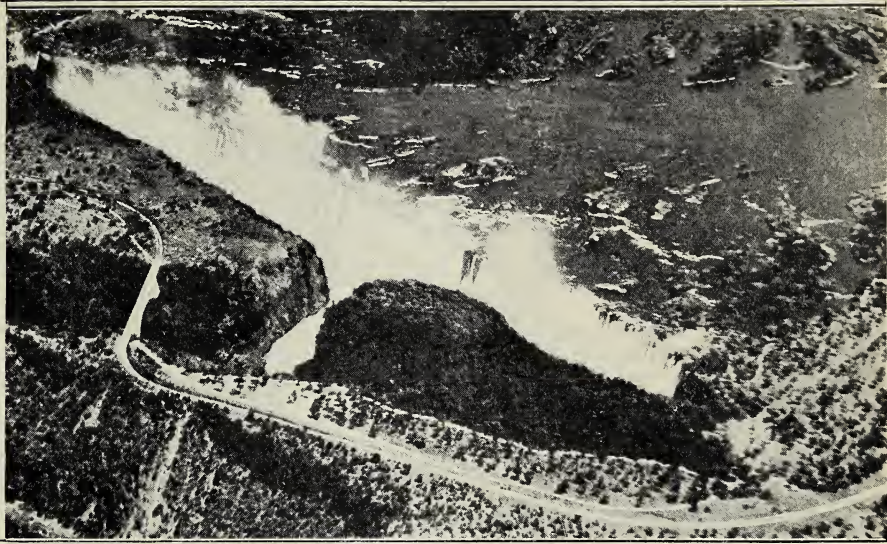
A geography party. Have you been preparing talks for company? Here are some ways of entertaining your guests: 1. Serve East Indies foods; as, coconuts, mangoes, bananas, etc.

2. Have an East Indies museum.

3. For souvenirs, make Manila paper books, tied with Manila rope; draw maps of the Indies on the covers, and fill the pages with facts and pictures about the Indies. Show your notebook work to your guests. Play some of your games for them.



Fig. A



© Ewing Galloway

Fig. A. The Victoria Falls in the Zambezi River, Rhodesia. The natives named the cataract *Mosi-oa-tuni*, "thundering smoke," because of the roar, the mist, and the flying spray as the river's waters drop into the long, narrow gorge worn in a soft streak of rock. The falls are $1\frac{1}{4}$ miles wide, 400 feet high. On the average 24,000,000 tons of water pour over the falls each hour.

AFRICA, SOUTH OF THE SAHARA

EXPLORING AFRICA

As you read, get the answer to this question: Is Africa alike all over? If not, tell how its parts differ from each other, and why they differ.

A CONTINENT WITH BANDS OF LAND

Bands like a zebra. Africa is an interesting continent. Nature has divided it into bands of different kinds of country (Fig. 280-A), almost as she has divided the hair of the zebra into bands of different colors. To cross Africa from north to south in an airplane is the best way to see these bands or natural regions.

The band or region with Mediterranean climate. We leave Alger (Algiers), on the Mediterranean coast, the morning after

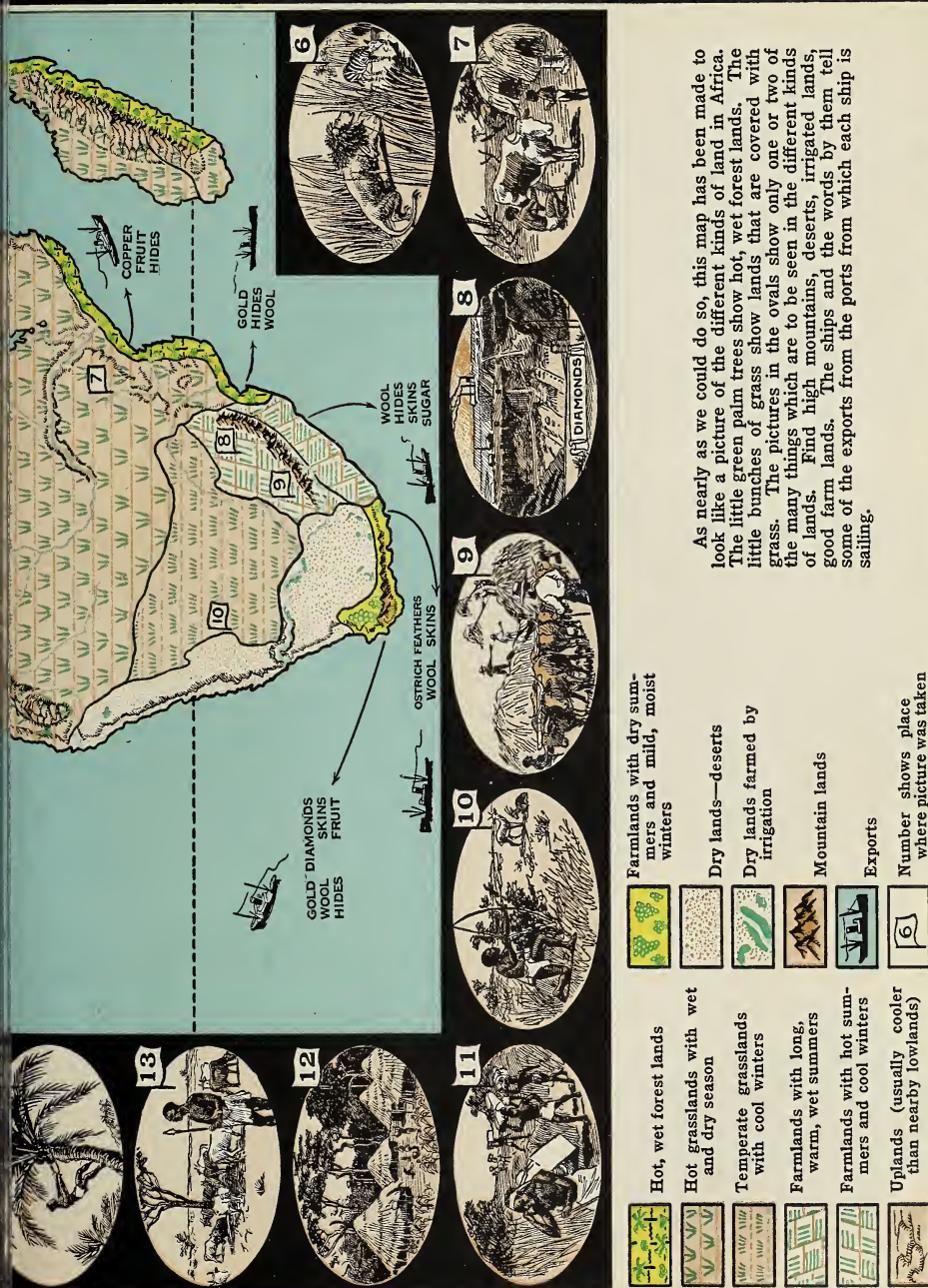
Christmas. As we wish to see the country, our plane travels only 100 miles an hour. For the first half hour we see railroads, trains, highways, automobiles, farmhouses, and fields green with wheat and winter beans. The country looks like the south of France, or like any Mediterranean country (page 56). Those wide green rows across the fields are olive trees (page 62).

Soon we cross mountains and reach for an extra wrap, for here it is frosty. We see nothing green except the dark evergreen trees of the few mountain forests.

The Great Desert. In an hour and a half we have crossed the Atlas Mountains. The land beneath us slopes southward toward the Sahara. We see bunch grass

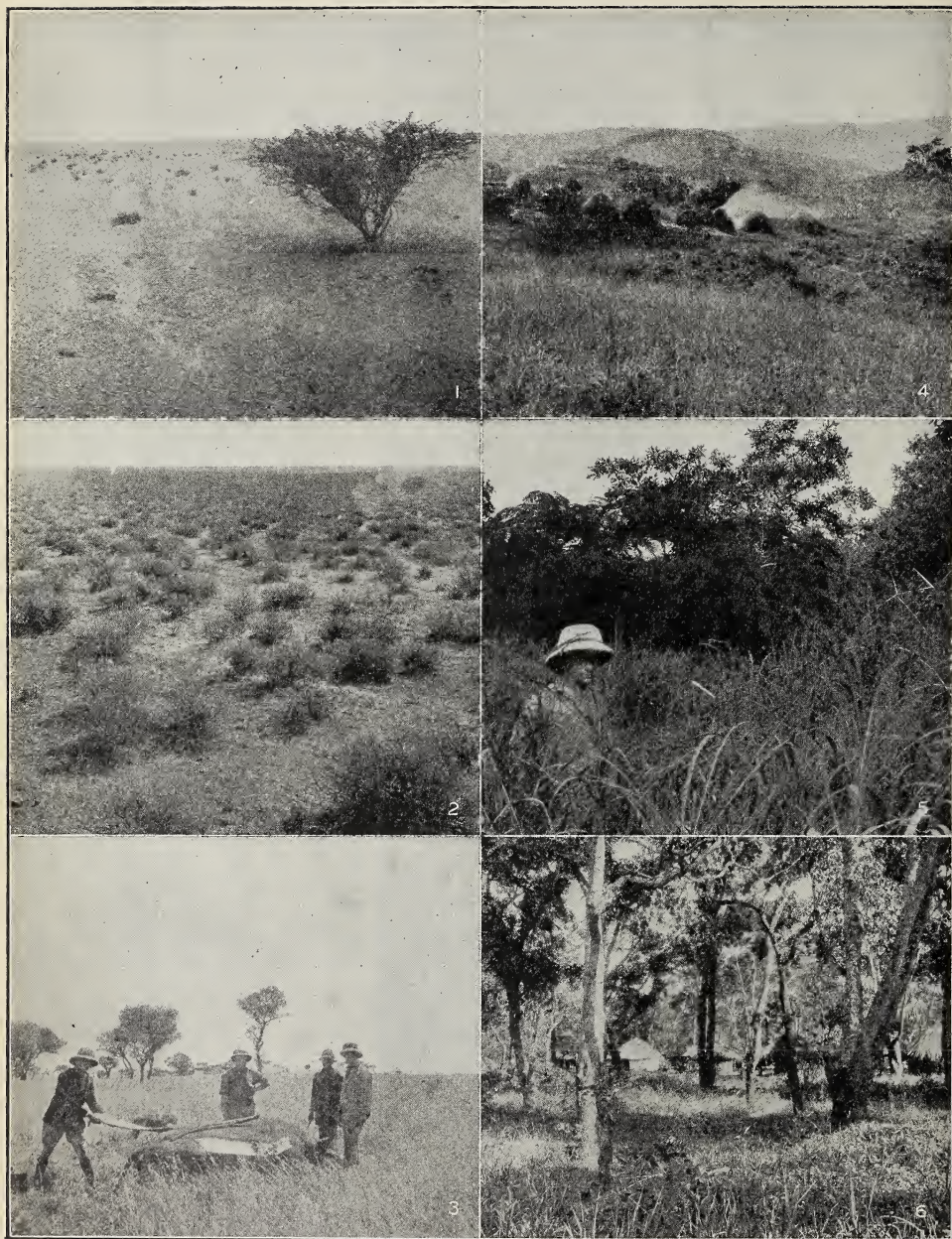


Fig. A. Africa as the home of man.



As nearly as we could do so, this map has been made to look like a picture of the different kinds of land in Africa. The little green palm trees show hot, wet forest lands. The little bunches of grass show lands that are covered with grass. The pictures in the ovals show only one or two of the many things which are to be seen in the different kinds of lands. Find high mountains, deserts, irrigated lands, good farm lands. The ships and the words by them tell some of the exports from the ports from which each ship is sailing.

Fig. A. Africa as the home of man.



Photos courtesy H. L. Shantz, U. S. Dept. Agr.

Fig. A. The journey from the desert to the forest.

1. Very few scattered bushes.
2. More bushes and sparse grass.
3. Short grass and scattered trees—big-game country.
4. More trees, more grass. Farmers' village of grass huts. Smoke from fire inside one of them.
5. Tall grass and clumps of low forest.
6. Grass-house village in open forest.
7. The last of the series is the equatorial jungle (Fig. 287-A) tied together with vines, and the very first is Figure 16-A, the dead desert producing nothing at all.

and scattered bushes, and five black tents — an encampment of Bedouin Arabs (page 20). In the third hour we cross a desert railroad and soon we pass over the oasis of Suf. Tell what you see there (page 23). Many uninteresting hours are now ahead of us — just desert, sand dunes, hard clay, bushes here and there, bare rock, more sand, more clay — until, 900 miles to the southeastward from Alger, after a long day's ride, we see the dark-green palm trees of the oasis of Murzuk. Two miles of palm trees stand beside a town with a wall of sun-dried bricks.

We land on the bare desert outside the settlement of mud houses. We are welcomed by the Italian army officer who commands the native soldiers of the garrison. They are mounted on camels. We camp for the night, and the plane is loaded with gasoline that came by camel back from a port on the Mediterranean.

We start the next morning for the point, 500 miles away, that is 20° north latitude and 20° east longitude. There we turn straight south and pass over 500 more miles of desert. Shortly after the turn we see a trail and a caravan of camels with packs on their backs going from the shores of Lake Chad to the oasis of Kufra. This day we make a thousand miles; we see no homes of men, except a few little huts at the outlets of small mountain valleys along the edges of the highland in latitude 19° north.

A stream from the uplands. After flying 500 miles straight south from latitude 20°, we come to a village of mud houses. If you look closely at the map (Fig. 14-A), perhaps the elevation of the land near this point will tell you why a village is here. Highlands, as you know (page 27), have more rain than lowlands, and during a part of the year a stream flows down from the highland to the eastward of this

place and makes an oasis. The black men who live here use the water of the stream to irrigate their fields of millet, corn, and bananas, and their gardens of pumpkins, beans, and other vegetables.

The gasoline for our airplane came on camel back from the end of a railroad far to the southwestward.

The tropic grassland. The next 500 miles brings us to the banks of the Ubangi River. But before we see the water shining bright in the sun, we cross a few miles of dark-green forest. What a change this 500 miles shows us! We pass over land showing all stages of plant life, from desert to forest, as shown in the pictures on page 282. First, we see sand and small bunches of grass and scattered bushes standing far apart, then taller grass, bigger bushes, and scrubby little trees; this kind of land is called *scrub land*. We then come to better grass, with larger trees scattered here and there; this is called *savanna land*, or *park landscape*. Soon we see elephant grass ten feet tall, with more trees.

Why this great change in the natural vegetation? We are passing over a land where there is an increase of rain (Fig. 284-B). Since most of the rain comes in a rainy season of a few months only, there is enough moisture for grass, but not enough for forest. In the early morning we pass over the tents of nomads; flocks of camels, cattle, and goats browse near the tents. As we near the land of more rain and taller grass, we see villages of grass huts, gardens, and cultivated fields near them. We see cattle, but no camels.

The town at which we stop on the banks of the Ubangi stands in the midst of fields of bananas and sweet potatoes. It has a steamboat landing; gasoline is cheaper there than at the last stop. Why?

The equatorial forest. From the banks of the Ubangi we fly onward to the south

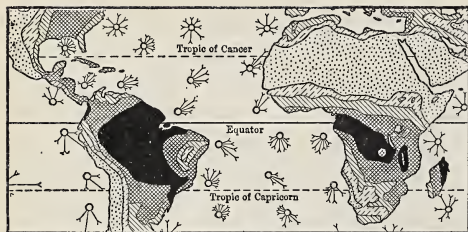


Fig. A. Distribution of rainfall from November 1 to April 30.

Note:—The dot areas show rainfall of less than 5 inches; the dash-line areas, 5-10 inches; the solid-line areas, 10-20 inches; the cross-line areas, 20-40 inches; the solid-black areas, over 40 inches. The “wind roses” in the oceans show directions from which the winds blow.

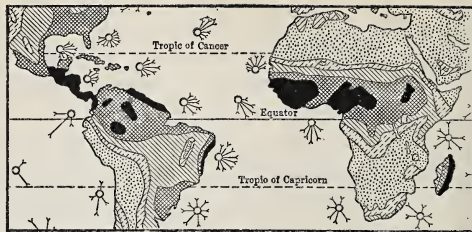


Fig. B. Distribution of rainfall from May 1 to October 30.

for nearly a thousand miles: over the black-green of the Congo forest, the equatorial forest, the great rain forest of central Africa. We cross the Equator, but we do not know just when. From time to time we see a river shining like a broad road cut through the forest. No, that black thing in the water is not a rock; it is a hippopotamus keeping itself cool in the water. The bits of water shining near the streams are swamps. Here and there we see a clearing, with grass houses and gardens around them, and then the black-green top of the forest. For hours and hours and for hundreds of miles we see almost nothing but black-green forest.

The southern grassland. At its southern edge, the great forest gets thin, and we come to another grassland, the southern grassland. We see the same things we saw in the northern grassland, but we see them in the opposite order. (Look again at Figure 282-A, and take the pictures in reverse order.) First, the tall grass, trees, villages, fields, and herds of cattle of the savanna land; then the plant growth becomes less and less until near latitude 20° south we come to land that is almost a desert.

Rainy season — dry season. We see one great difference between the northern grassland and the southern grassland. The northern one is yellow and brown; the southern is green. The northern grass-

land is yellow with dead grass. It is the dry season. At the southern edge of the Sahara the air is hazy with dust blown in by the hot winds from the Great Desert. We see green only in the valleys where the water ran at the time of rains, and trees line the banks of the streams.

The southern grassland is green with growing grass, because it is the rainy season there. Trees are in full leaf; the birds have built their nests. In the northern grassland at this season, many of the trees have shed their leaves and the birds have flown away to a greener land.

Another nomad land. As we reach the poorer grassland, we see no more villages and farms, for we are again in nomad land. Some people call it desert. From time to time we see tents and herds of cattle and goats, but there are long stretches where we see no people at all. At last we see a little streak of water; it is the Orange River, the only river we cross in nearly a thousand miles. Water flows here only because of the rain that falls on the mountains hundreds of miles to the eastward. At the Orange River we leave longitude 20° east and head straight for Capetown.

Another land of Mediterranean climate. In three hours we have passed over some desert and some poor pasture with sheep and goat ranches. We begin to see signs of more rain. Here are farmhouses, railroads, wheat fields; but the wheat fields

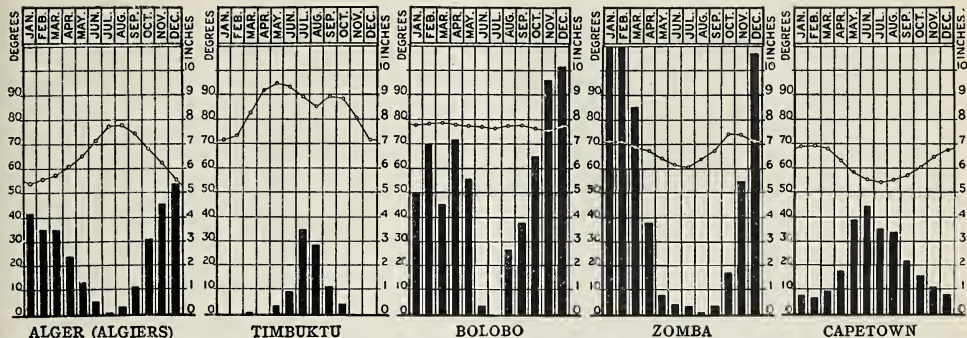


Fig. A. Normal conditions of rainfall and temperature in different parts of Africa. Find each place on Figure 278-A and tell about the weather in its neighborhood. Bolobo is northeast of Léopoldville on the Congo River.

are yellow and reapers are running. (Fig. 58-A.) We cross a valley whose stream irrigates a dark-green orange orchard. On the higher land above the irrigation level are long rows of grapevines. This tip of Africa is like the northern end — a land with Mediterranean climate (page 56).

You can think of Africa, with its bands of climate, as being built two-sided, both sides alike, as is man. Think of the African forest as being like a man's body; the good grasslands are like his two upper arms; the poor grasslands farther away from the equator are like his lower arms; the deserts like his wrists; we may call the two regions with Mediterranean climates, the hands of this huge, imaginary man.

THINGS TO THINK ABOUT AND TO DO

A free-hand map with zebra stripes is easy to draw. 1. First draw a rectangle 8 inches long and $6\frac{1}{2}$ inches wide. Draw the Equator across the middle, and parallels 10° , 20° , 30° , and 40° N. and S., one inch apart. Copy the outline of Africa over these parallels.

2. Study Figures 280-A and 281-A and shade lightly with crayons the "zebra stripes."

Travelers' talk. Use these expressions in sentences to tell what you see:

| | |
|------------------------|-----------------------|
| bunch grass | Mediterranean climate |
| vineyards | wheat fields |
| encampment of Bedouins | sand dunes |
| native chief | camel back |
| Italian officer | millet |
| oasis | scrub land |
| savanna land | elephant grass |
| flocks browse | equatorial forest. |

EARLY EXPLORATIONS AND COLONIES

The Dark Continent. Many hundred years ago, the European people knew that there was a continent of Africa, but the Sahara kept them out of the center of it. The coasts of Africa were not attractive to the European sailors and for a long time no one tried to enter Africa by sea. At length, the Portuguese, Vasco da Gama, sailed around the point of Africa a few years before Columbus discovered America, but it was not until after 1877 that the people of Europe and America knew anything about where the Congo River was. In that year the English explorer Stanley finished a thirty-three months' journey across Africa from the east coast to the mouth of the Congo. The explorer brought out with him a map that he had made to show something about the Congo River.

Why did Africa remain unknown so long? When Stanley was discovering the Congo, the Mississippi River in the heart of North America had its steamboats; railroad bridges crossed it, and millions of white men lived in the many states west of the great river in the interior of North America. To this day there are but three and a third million white men in all Africa. One and a third million are near



Fig. A. Exploring Africa. The automobiles of the American explorers must be pulled over the soft earth of the road and the bamboo-covered culverts.

the Mediterranean and nearly all the others are in South Africa. The countries of Europe did not care much about Africa until near the end of the nineteenth century. As you will see, there are good reasons why settlers thought better of North America than of Africa.

A continent hard to explore. As the European sailors sailed down the west coast of Africa, they found, first, hundreds of miles of sand and desert where they could not even get water to drink. As you may imagine, they sailed on. The African coast is strangely without harbors. For hundreds of miles it offers only sandbars and surf, instead of nice sheltered bays or wide open rivers, such as the sailors found at Norfolk, at Philadelphia, at New York, at Boston, and on the coasts of Maine and Canada. Back of many of the sandbars is a zone of swamp and forest, full of mosquitoes, malaria, fevers, and other strange diseases that killed many of the early explorers. To this day, the

insects and the very hot climate of central Africa make life so very hard for the white man that even now few indeed go there expecting to stay.

A stopping place, not a home. There were reasons why the only interest of Europeans in Africa for some three hundred years was to use it as a stopping place, where their slow-sailing ships could get water and fresh food on the way to India. The Portuguese had a stopping place in South Africa called *Algoa Bay*, meaning "To Goa" (a Portuguese colony in India). On the east coast of Africa the Portuguese town of Lourenço Marques is on *Delagoa Bay*, meaning "from Goa." The Dutch, who had colonies in the East Indies, made a settlement at Capetown, then called *Table Bay*, because of the wonderful Table Mountain near it.

The rush for colonies. After England and Germany began to develop manufactures and to have a large foreign trade, the need for raw materials became more urgent; then the countries of Europe became interested in Africa south of the Sahara and north of the southern tip. In a few years after Stanley's journey, the European countries made a rush for colonies, and all Africa was divided up among them except Ethiopia (Abyssinia, page 298) and Liberia (page 292). Now one third of the whole continent is under British control. The French have nearly as much.

THINGS TO THINK ABOUT AND TO DO

"Not Welcome" on Africa's doormat.

1. Give reasons why few white men visit Africa.

2. Why Africa was explored after North America, though it was known earlier.

3. Why Stanley's trip was remarkable.

More reasons. 1. Why did Vasco da Gama sail around Africa?

2. Why did Portugal claim part of Africa?

3. Why did Germany and England explore Africa?

4. Why did Holland claim South Africa?

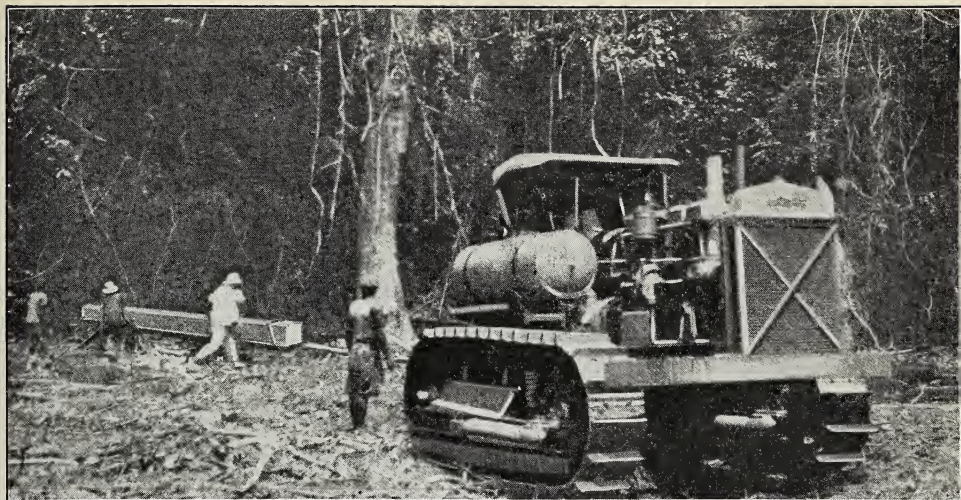


Fig. A. The big tractor is getting out mahogany logs from the "rain forest." Notice how dark the forest is. See the many vines hanging from the trees.

Courtesy Caterpillar Tractor Co.

THE EQUATORIAL RAIN FOREST REGION

Suppose a young man in the United States were to inherit ten square miles of forest land on the banks of the Congo River in latitude 0° , on condition that he live on it. When you have read this chapter, tell what he might do and what he should do.

LIFE BEFORE THE WHITE MAN CAME

The rain forest. Suppose you are in a little boat on a river in the equatorial forest. You wish to land. You look at a wall of green that lines the river; you cannot see through it. You pull your boat to the stream bank, but find no place where you can step ashore because of the bushes that line the bank and the vines that climb from bush to bush and thus tie them together. If you are a good African traveler, you have a long knife and you will use it to cut out a place where you can step ashore, and cut your way through the bushes and thus get into the forest.

If it is what is called a *rain forest*, it is so dark in there that you can scarcely see;

so dark that no grass grows, although there are bushes and small trees. You pick your way among the great trunks of tall trees. The trees have no low branches. The stems of many kinds of climbing vines twine around the great trunks, like little ropes, big ropes, huge cables. At the top, 125 feet from the ground, is a great mass of leaves and flowers. You cannot see the flowers. They are at the top, looking at the sun; you are at the bottom, looking up at the underside of the roof of leaves, and only here and there do you get a tiny peep at the sky.

There is no breeze. The air is damp and stifling. If you are wearing a collar, you want to tear it off. You want a fan to make a breeze. You slap the mosquitoes on your face and hands. You want something cool to drink. You want to sit down. Such is the heat of the equatorial forest. It wilts the man, especially the white man.

This forest is not silent. You hear the buzz of mosquitoes and other tormenting



By Paul L. Hoefer from *AFRICA SPEAKS*

Figs. A-B. Pygmies. The "tall" man in the picture at the left is less than six feet tall. He is not a Pygmy, but he shows by comparison how tall they are. The Pygmies at the right are seated in a clearing in the "rain forest" beside an abandoned hut.

insects, the chatter of monkeys, the bark of baboons, the constant patter of parrots and other birds. Perhaps you hear the rumble of a buffalo herd and see the tracks of an elephant that has gone.

Beneath this rain forest we walk on a soft, moist mass of brown rotting leaves and low-growing herbs. The native is careful not to step on a fleck of sunshine, for there a snake (it looks for all the world like a stick or fallen leaves) may be sunning itself. In other places, where the soil is poor or there is less rainfall, as toward the edges of the great forest, the trees are not so tall, nor are they so close together. There are more bushes beneath, and a man can only get through by cutting a path.

We find a path, and follow it until it leads to a wall of leaves like the one by the bank of the river. We pass through this wall into a clearing. The sunshine almost blinds us for a moment, then we see the grass houses of a village that we have already looked down upon from our plane (page 284). As we look back at the

wall of the forest from which we came, we can understand why one of the forest peoples has in its language, for "I depart," "I go into the forest"; for "I arrive," "I come out of the forest."

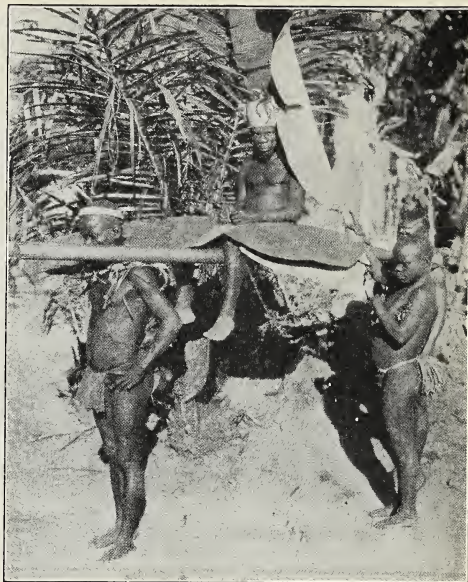
The Pygmies. How do men live in the equatorial forest? Some of them, called *Pygmies*, are little men like the *Negritos* of the East Indies (page 266). They have no property but bows and arrows, and live by hunting and by gathering wild fruits, nuts, and roots, as the *Negritos* do.

The forest farms. But most of the people of the African forest are large, strong, cheerful people called *Negroes*, and nearly all are farmers. Their farms are very different from those of the United States. There is no horse, no cow, no pig, no plow.

In the season of least rain, the native farmers take their iron axes and knives (for they knew how to make iron long before they heard of a white man), and with these tools they chop down the smaller trees, and cut off the vines. They are careful to cut rings of bark from the large

trees. Perhaps they will make fires against the big trees to make sure of killing them. The leaves then fall from the dead trees and vines, and the sunlight can now reach the ground. Among the dead but standing trees, crops are now planted. With sharp sticks the people dig holes and put into the holes banana shoots and the roots of cassava and sweet potatoes. They plant rice, corn, beans, tomatoes, and other garden vegetables, and plenty of pumpkin seed, for they are very fond of pumpkins. Some of these crop plants were brought to Africa by white men. For months the forest farmers pull weeds and hoe the ground and take turns watching the garden to keep the elephants and the wild pigs away. By this means they have crops to carry back to the village; every day in the year, as long as they keep that garden, they can gather food.

Abandoned farm — abandoned village. The trees of the equatorial forest grow very big and tall, but, after all, much of this ground is not rich, and, after two or three years, the crops in the garden begin to fail. Some say that after a time it is more work to keep the undergrowth down than it is to make a new clearing. After a few crops, the Negro farmers make a new garden in a new place. Immediately briars and vines spring up in the old garden; in a few weeks it is a thicket; in a few months it is jungle; then the plants choke one another and finally what was a little farm once more becomes the tall rain forest. Meanwhile the people of the village keep moving their gardens, until finally they have had gardens on all the good ground near the village; they then move the village. Thus much of the tropic forests of the world have been gardens and forests, gardens and forests, over and over again; no one knows how many times this has happened.



By Paul L. Hoefler from *AFRICA SPEAKS*
 Fig. A. A Pygmy chief in the "rain forest" being carried by two of his men while a boy walking alongside shades him with a banana leaf.

THINGS TO THINK ABOUT AND TO DO

Stanley could tell. Henry M. Stanley could tell the answers to all of the following questions; can you?

1. Why is it so dark in the rain forests?
2. Why is vegetation so dense?
3. Why is there no grass?
4. Why are the flowers chiefly at the tree tops?
5. Why is it wet underfoot?
6. Why is the climate uncomfortable for whites?
7. Why does an African word for "depart" mean "I go into the forest"?
8. Why do Negro farmers have no animals?
9. Why do Negro farmers use no plows?
10. Why do Negro farmers cut rings around tree trunks?
11. Why do they abandon their farms?
12. Why do they abandon their villages?

For extra credit. *How I Found Livingstone*, by Henry M. Stanley, is a very interesting book. Possibly you might like to read parts of it and report on your readings to the class.



By Paul L. Hoeffler from AFRICA SPEAKS

Fig. A. How many elephants can you count in this open grassland or savanna? How many elephants with tusks can you count? The tusks form the ivory of commerce.

☞ Make a map of the west coast of Africa from 10° north to 10° south, and put on it the boundaries and names of all the colonies and countries, and initials to show what countries govern the colonies.

LIFE AND TRADE AFTER THE WHITE MAN CAME

The white man and ivory and rubber. When white men first came to Africa, what they wanted most was ivory, procured from the great tusks of the elephant. So the natives hunted elephants and sold ivory to the white men until elephants were much reduced in number.

When the automobile came, the white men wanted rubber. There are several kinds of wild rubber trees and vines in the African forest; the natives hunted rubber trees, and made rubber as quickly as possible. The result was that most of the large rubber trees were killed, and the rubber trade decreased, as had the ivory trade. You know where most of the rubber now comes from (page 272).

By boats and trains across equatorial Africa. The white man stayed away from

Africa for a long time, but when he did go there, he worked rapidly. You can now cross Africa near the Equator by boat and train. But if we examine the route, we shall see a geographic reason why the white man was so slow in getting there. Ships can sail right up the Mississippi or the Hudson or the Delaware, but near its mouth the Congo comes tumbling down with many rapids, from the plateau. Africa is a continent of plateaus. Ocean steamers can go up the Congo only for a hundred miles. Then you must travel by railway for a day through the forest to Léopoldville. Here you will find an iron steamboat, put together right there from pieces brought out from Europe. For days the boat will chug up the Congo. It is nearly a thousand miles to Stanley Falls, where you must again land and take a train around more falls. Then another boat, and another train, until finally you reach the shore of Lake Tanganyika. Here another steamer awaits you, and, from the eastern shore of the lake, a final train carries you to the east coast.



Courtesy Palm Oil Co.

Figs. A-B. A palm-oil factory in the Gold Coast, West Africa. The native boys are pounding the seeds to extract the oil. At the left is a bunch of palm nuts as it hangs from the tree.

Palm oil. White man's transportation on this great route and in the forests along the Gulf of Guinea makes it possible for the people to sell an old, old crop — palm oil. One of the great natural riches of these forests is the oil palm, a wild tree which grows from about 10° north of the Equator to about 10° south of the Equator, and bears huge bunches of fruit. All that the native needs to do is climb a tree, cut off the bunches of fruit, and let them down. His wife and children pick the fruit from the bunches, throw them into a pot, or perhaps into a hollow log, and boil them by means of a fire under the pot, or hot stones in the hollow log. Boiling brings oil out of the flesh of the fruit, oil that is good for food. It is the butter, cream, bacon, lard, and salad oil for many millions of people who live in Africa. White men have also found that the oil is good food. It is an important part of the margarine of the Dutch and Danish dairymen (page 153), and of tens of millions of city people in Europe. Palm oil makes millions of cakes of soap in

America and Europe. We cannot make the tin plate from which we make tin cans without passing the sheet steel through hot palm oil before it is coated with tin.

The palm kernel. The center of the palm fruit is a nut, and within the nut is a kernel. It, too, has oil as good as that within the fruit, and so today palm nuts and palm oil are the great exports of the equatorial forest. These products come down the Congo and the railroads along the Guinea coast by the boatload and the trainload. They go to Europe by the shipload — hundreds of thousands of tons of them, millions of dollars' worth of them.

Oil-palm plantations. To get the palm nuts, men do not need to kill the palm trees. This industry is, therefore, increasing year by year, as more palm trees are found in the forest, and more trails are opened. In a few places, white men are making plantations of oil palms, but most of the produce still comes from wild trees found in the forest.

Liberia and rubber cultivation. More



Fig. A. Young rubber trees planted by an American corporation in Liberia. In about six years these saplings will be sturdy trees and ready to be tapped for the latex from which rubber is made.



Fig. B. Each morning the natives cut channels in the rubber trees from which the latex flows into little cups.



Fig. C. The cups of latex are poured into cans and carried on the heads of natives from the groves to the factory.

than a hundred years ago, in the days when we had slavery in this country and before there were any European colonies in the African forest region, we sent some free Negroes back to Africa, where they founded the country called *Liberia*. They named their capital *Monrovia*, after the President of the United States, and they set up a government which they call a republic. Liberia would have been taken as a European colony long ago, except for the fact that it is partly under the protection of the United States.

An American company recently spent many millions of dollars starting rubber plantations in Liberia, but, unfortunately, they have to compete with the diligent Chinese and the low wages of the Far East (page 272).

Cacao. The heat, dampness, and lack of wind in the equatorial forest make a combination of climatic conditions exactly suited to the cacao plant, which, like the Brazilian rubber tree, is a native of the equatorial forests of America. A strong wind would blow the big cacao fruits off the trees. For a time, Brazil and Ecuador, in the same latitude, were the chief producers of the world's supply of cacao, but white men introduced the cacao tree into the Guinea coast lands. Its cultivation is simple. First cut down most of the forest, leaving a few trees for partial shade; next, plant cacao, and then chop down the other bushes with your big knife. That is all, except to pick the cacao fruit, cut out the seeds (called *beans*), and dry them. This new industry thrived amazingly on the Guinea coast. It was aided by steamboats, railroads, and trucks where there are roads, and in a few years the little colony of Gold Coast was supplying half of the cacao of the world. Next after palm products, cacao is the chief export of southern (forested) Ni-



Fig. A. Old Chief Chiquetecoli and some of his tribal counselors sit for their photograph in a village in the Congo forest. The Chief is quite dignified in his German war helmet and great coat. Mrs. Chiquetecoli has on a new gown purchased from the traders along the Congo.

Courtesy American Board of Foreign Missions

geria; and Princes Island, Fernando Po, and St. Thomas, tiny volcanic islands in the Gulf of Guinea, are producing thousands of tons of cacao.

Trade on the forested coast. Most of the ports along the Gulf of Guinea, like the one at the mouth of the Congo, now have railroads or steamboats that go into the forests of the interior, to meet the human carriers with pack upon their heads. At all these little ports the European steamers stop and the sweating Negroes load on kernels and oil, more kernels and oil, bags of cacao beans, mahogany logs, and tin from mines in Nigeria. In payment, he unloads first of all, cotton cloth, and then machinery and a thousand things in small quantities, from cigarettes to needles and pins, and including alarm clocks, cheap jewelry, and most things that boys and girls and men and women want.

Tropic diseases. A map of equatorial Africa shows many European names. We say that it is all made up of European colonies. Yet the Gold Coast, with its

railroads, its steamships, its wonderful production of cacao, has only one white man to about 900 native blacks. Why so few white men? *Diseases.* There is the answer.

Malaria is a disease produced by a tiny little foreign creature living in man's blood. A Congo Negro may be scarcely bothered with it at all, but if a mosquito bites him and gets some of his blood, and then if the mosquito bites a white man, it may give malaria to the white man and the disease may kill the white man. No wonder the Europeans do not move to Africa in very large numbers.

Sleeping sickness is worse than malaria. It is a disease that kills men, cattle, and horses. Therefore man has to carry his own burdens through the Congo forest paths (Fig. 289-A). Sleeping sickness is passed from one animal to another by the tsetse fly. This disease may have been on the Congo since long before the white man came, but it is spreading now since the white traders and the steamboats and the railroads are carrying people from place



Fig. A. Cattle on the Sudan. In a country full of lions the young herdsman in the picture has no protection other than his spear.

By Paul L. Hoefer from AFRICA SPEAKS

to place. A man with sleeping sickness traveling with a trader or riding on the steamboat, goes to a new village; the flies bite him, and they give his disease to the village. Therefore the population of many parts of equatorial Africa is declining in numbers.

THINGS TO THINK ABOUT AND TO DO

The story of a line. 1. Make a map of the Congo River; color the land around it to show plains and plateaus.

2. Locate two cities, a lake, falls.

3. Draw a line to show a railroad.

4. Draw arrows to and from the river mouth, and on them write the names of exports and imports.

5. Below your drawing write a short paragraph to tell how freight travels up and down the Congo.

New expressions. Use each of the following expressions in a sentence about equatorial Africa:

1. kernel, margarine.

2. forest trail, plantations of oil palms.

3. free Negroes.

4. malaria, sleeping sickness, tsetse fly, declining population.

Extra credit. Pretend you are: 1. A trader who has a small steamboat on the Congo.

2. Manager of a cacao plantation.

3. A locomotive engineer on a Congo railroad.

4. A Negro boy in a mission run by English missionaries.

5. A mosquito.

6. A tsetse fly.

7. A pack carrier on a forest trail.

8. An elephant.

9. A wild rubber tree.

10. A rubber planter in Liberia.

Tell your story in a letter to a friend in America.

CHAPTER SUMMARY

Have you been thinking? Have you been thinking about the young man who inherited ten square miles of forest land on the banks of the Congo, and about what he might do with his inheritance? What a fine play or story or motion picture you could write about his adventures! Here are some hints for your acts, chapters, or scenes: he travels up the Congo to find his land; he explores the forests and meets some natives who live on the land; he starts a plantation. You may choose sad or happy endings; as, his plantation fails and he loses his money, or he dies of a tropical disease or from wild animals; or his plantation is successful and he becomes rich.

Before and after. Divide your class into two groups; let group one describe the life of the Negro before the white man came, and let group two describe the life in equatorial Africa since white men have taken possession. Appoint judges to decide these questions: Has trade helped the Negro? Do plantations help him when he ceases to live from his garden and lives by wages and buying at the store? Do they help the European nations?



Photo R. T. Dooner

Free Natural History Museum, Academy of Natural Sciences, Phila., Pa.

Fig. A. The "King of Beasts" in his native land—the grasslands of Africa.

THE GRASSLANDS OF SUDAN AND ETHIOPIA (ABYSSINIA)

What differences does it make to man, his living, and his government if his home is grassland or forest? As you read this chapter, keep this question in mind.

THE SUDAN

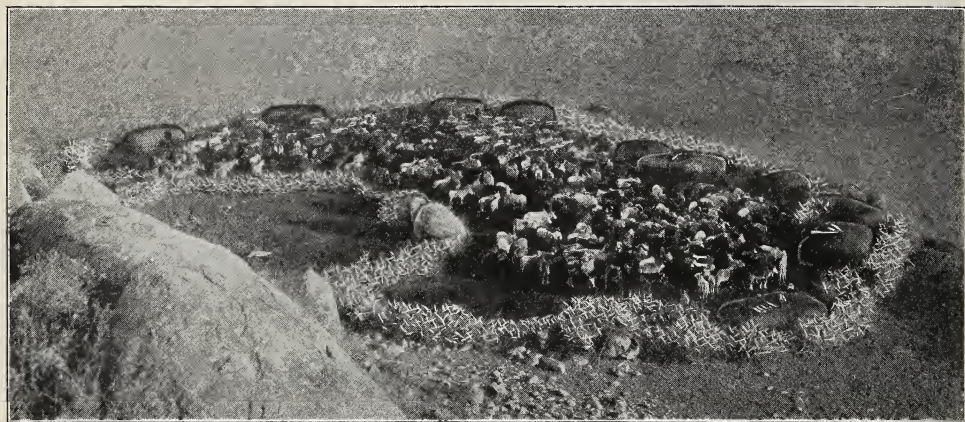
The map of a transition land: How long is the grassland that lies between the equatorial forest and the Sahara (Fig. 280-A)? how wide? Most of it is called the *Sudan*, no matter what people lives there, no matter what country rules it. Sudan is the name of a region.

You remember how this grassland changes gradually from the dry brown desert on one side to the wet green forest on the other side (Fig. 282-A). Therefore we call it a *transition* land, meaning a land of gradual change.

The animals. This grassland is the home of many wild animals that eat grass. Here we find the zebra, the hartebeest,

the gnu, many kinds of antelope; and in the bushier parts, the rhinoceros and the elephant hide themselves in the thickets, and the giraffe nibbles the leaves of the low trees. The meat eaters also live here; the lion crouching and creeping through the tall grass to spring upon the antelope or the zebra; the leopard hiding in the top of a tree to spring upon their backs; and, following the killers, come the hyena, to eat the carrion leavings, and the jackal, with his monstrous strong jaws, to crack the bones and eat the marrow.

A road for migrating peoples. Grass makes of the Sudan a route whereby nomad peoples can cross Africa with their flocks. Many peoples have come into this region from the east, traveled across it, and worked down into the forest as far as they wished to go. The last to come was the Arab. Much of the north-



By Paul L. Hoefler from AFRICA SPEAKS

Fig. A. This wonderful picture taken on the African grassland shows a village protected by thorns. The huts of the village face inward. Why thorns, then huts, then cattle?

ern Sudan is ruled today by nomad tribes of Arab stock.

The nomads' strip. The northern part of the Sudan, with its scanty rain and scanty grass and scrub, is a place for the nomad, not the farmer. Nomads in this part of the Sudan have conquered many a farming village to the south and made the villagers pay tribute. Some of these nomad tribes live by this means, and when the rainy season comes, they move out into the desert and camp for a few weeks, to keep from getting wet.

The farmers' strip. The southern part of the Sudan, the land of more rain, the land of more grass, the savanna land, is the farmers' country. When white men first saw it, the people were keeping cattle, donkeys, horses, and mules, and were growing millet and sorghum, beans, and peanuts. Indeed, the peanut came to the United States on ships with African slaves. The people also used meat, milk, and butter from their herds.

Parts of the southern Sudan are densely peopled; when the white man came, it had several times as many people to the square mile as had the Congo forest. The grass-

land part of Nigeria has forty people a square mile, whereas the Belgian Congo has but eleven. Nigeria is as large as Louisiana, Texas, and Arkansas, and has twice as many people.

For centuries these farm people of the Sudan have been workers in iron, gold, copper, bronze, antimony, and tin, and when the first white man got to Kano, the city had perhaps forty thousand people and was surrounded by a stout mud wall that was a perfect defense against horsemen or riflemen.

Government. For many centuries kingdoms have risen and fallen in the Sudan, much as in Europe and Asia. Sometimes some king, with the aid of his well-trained cavalry, could rule thousands of square miles and millions of people. This was very different from the little village in the Congo forest, where man had to walk, and the greatest chief could rule only a few near-by villages.

We say now that the Sudan is ruled by Europeans, but northern Nigeria, the Sudanese part of that colony, has only one white man to 6,000 natives, while the Belgian Congo has one to 400. What

really happens is that the people rule themselves very much as they always did.

Trade. The railroads make it possible for the farmer to sell some produce in a distant market, and most important of the export products is the peanut, which thrives in the grassland climate. Peanuts go down the railroads of Nigeria and Senegal to the coast by the trainloads.

Exports show how climate changes trade. Sierra Leone, in the forest, has palm kernels, palm oil, and kola nuts as its chief exports. Senegal, in the grassland, has peanuts. Northern Nigeria has peanuts; southern Nigeria, palm products.

Cotton. Europe must have cotton, and does not want to depend entirely upon the United States to get it; so the European countries have made a great effort to increase the cotton crop in their colonies. Nigeria is one place where cotton of American varieties is grown, but the industry is increasing more rapidly in Anglo-Egyptian Sudan. The eastern part of the Sudan is rather dry, and much of the cotton can be grown only by irrigation. Therefore the British have built on the branches of the Nile great irrigation works like those in the western United States.

Meat for the future. The Egyptians, crowded on their little farms, buy much beef and mutton from sparsely peopled Anglo-Egyptian Sudan. The Anglo-Egyptian Sudan, like the rest of the Sudan, might export many more cattle and sheep and much more meat than it does. Sheep in this part of the world do not have wool; they have hair instead.

Gum arabic. Probably the mucilage in the bottle in your school came from the Anglo-Egyptian Sudan, which supplies nearly 85 per cent of the world's supply of gum arabic. The gum exudes from cuts the natives make in the bark of a bushy scrubland tree.

The future. The climate of the Sudan is much better for man than that of the forest, and, with the white man there to stop wars, the population is increasing rapidly and there should be a large trade between this region and countries with different industries.

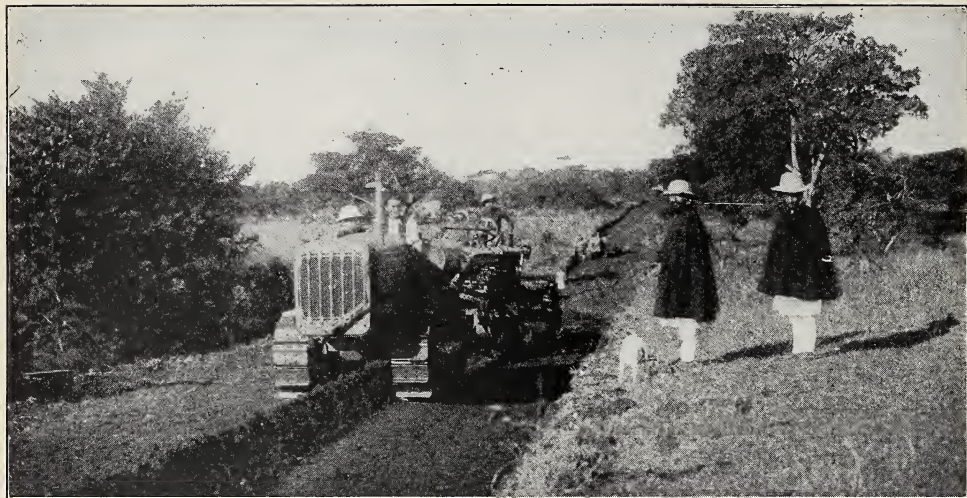
THINGS TO THINK ABOUT AND TO DO

The fewer, the better. Use these expressions in sentences about the Sudan:

1. Transition land, Sudan.
2. Meat eating, grass eating, carrion leavings.
3. Migrating people, Arab stock, pay tribute.
4. Irrigation works, increase cotton crops.
5. Mucilage, gum arabic.
6. Workers in metal, perfect defense, Kano.

Go head hunting. Find the "heads" of these sentences. If you have time, copy the completed sentences; if not, copy the numbers of the "heads" that complete the sentences.

- | | |
|--|--|
| 1. Anglo-Egyptian sheep have hair | Because their flocks needed grass |
| 2. Native kingdoms are large in the Sudan | Because they eat grass |
| 3. Antelope and zebra live in the Sudan | Because they eat meat |
| 4. The southern parts of the savannas have more and better grass than the northern parts | Because they eat carrion leavings |
| 5. Native villages are small | Because there is more rain |
| 6. Domestic animals can live on farms of the savannas | Because their horses carry troops |
| 7. Arabs invaded the northern Sudan | Because their warriors must walk |
| 8. Farmers live in the southern part of the Sudan | Because there is no tsetse fly |
| 9. Sierra Leone exports palm oil and kernels | Because it has a forest climate |
| 10. Sudan people no longer war and kill | Because it has a grassland climate |
| 11. Lions and leopards live in the Sudan | Because the climate is too hot for wool |
| 12. Senegal exports peanuts | Because the climate is better than in the forest |
| 13. The population of the Sudan is increasing | Because they came from Senegal |
| 14. Jackals and hyenas live in the Sudan | Because white men have stopped wars |
| 15. Peanuts were brought to America by Negro slaves | |



Courtesy Caterpillar Tractor Co.

Fig. A. The gentleman nearest the dog in the picture is the Emperor of Ethiopia who was obliged to flee from his country in May, 1936, because of the approach of the Italian armies. Back of him is his son, the Crown Prince. They are watching big American tractors begin the job of making a road from the capital, Addis Ababa.

ETHIOPIA (ABYSSINIA) AND HER EASTERN NEIGHBORS

A highland country. In the scramble for African colonies, the European countries managed to take almost the whole of the continent without fighting one another about it, although they came very near to it several times. They took Africa by a process something like, "You take this, and I'll take that." Italy said she would take Ethiopia; so, in 1896, the Italians landed an army on the coast of the Red Sea in what is now Eritrea, and started toward the plateau. What is the elevation of this plateau? The cool climate of the plateau makes the people more energetic than the men of the hot lowland, and the highland is easier to defend than is the lowland.

Before the Italian army had got very far, it was met by a real man, who called himself, *Menelik II, King of Kings, Emperor of Ethiopia*. He had back of him an army of dark-skinned highlanders, and they defeated the Italian army thoroughly;

whereupon the Italians made a treaty recognizing the independence of Ethiopia. Later, England and France, the other countries having adjacent lands, joined Italy in recognizing the independence of Ethiopia, and promised to respect it.

In October, 1935, however, war broke out again between Italy and Ethiopia. The Italians advanced southward from Eritrea (Fig. 278-A [R-4]), captured Addis Ababa, May, 1936, and proclaimed the King of Italy, Emperor of Ethiopia.

The ten or twelve million people of Ethiopia are composed of many tribes with princes, chiefs, or kings of their own. The Ethiopians (Abyssinians) proper number about 3,000,000. They are of a race that is sometimes called *Hamitic*, a tall, strong, brown people, with thin noses that are straight, sometimes even convex. They have some Arab blood in their veins, and the royal family claims to be descended from King Solomon and the Queen of Sheba. They are Christians and have been so for many

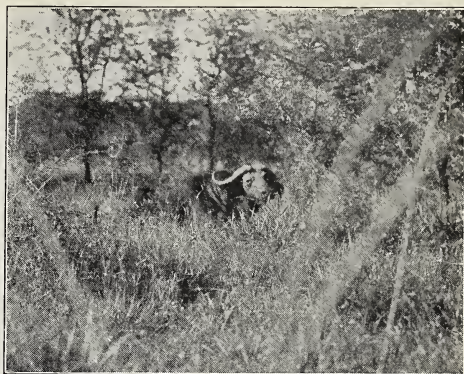
centuries. I have seen them baptizing their children in the River Jordan. This religious pilgrimage is held dear by the Ethiopian Christians, just as is the Mohammedan journey to the sacred city of Mecca.

The Ethiopian plateau. What is the elevation of Addis Ababa, the capital of Ethiopia? How long and how wide is the area having the same elevation? This plateau causes a longer rainy season and much heavier summer rain than falls either to the east or west of it. It is the water from the Ethiopian highland that makes much of the Nile flood (page 27).

Parts of the highland are forested, parts are grass and grain land. The eastern lowland has less rain and is scrub land.

The produce of Ethiopia. As a place to live, Ethiopia is much like the better parts of the Sudan, but, because of the high elevation, is even more like Mexico. Deep, hot valleys have been cut into the plateau. Up to 5,000 feet altitude, sugar cane, coffee, and other tropical trees and products grow. Ethiopia is supposed to be the home of the coffee plant, and there are hundreds of square miles of wild coffee trees. There are a few coffee plantations, operated by Belgian companies, and one company is growing cotton. From 5,000 to 8,000 feet the climate and products are temperate and there is a large area of this land. Here most of the people are farmers or keepers of cattle.

Horses and mules are common. Indeed, Ethiopia is a land of the man on horseback. There are no roads except the one railroad to the sea, and a few miles of automobile road near the capital. Traveling is done on the backs of horses, mules, donkeys, or camels. All freight is borne on the backs of animals or men and when a gentleman goes forth, he is accompanied by retainers. The greater his rank, the



By Paul L. Hoefer from AFRICA SPEAKS

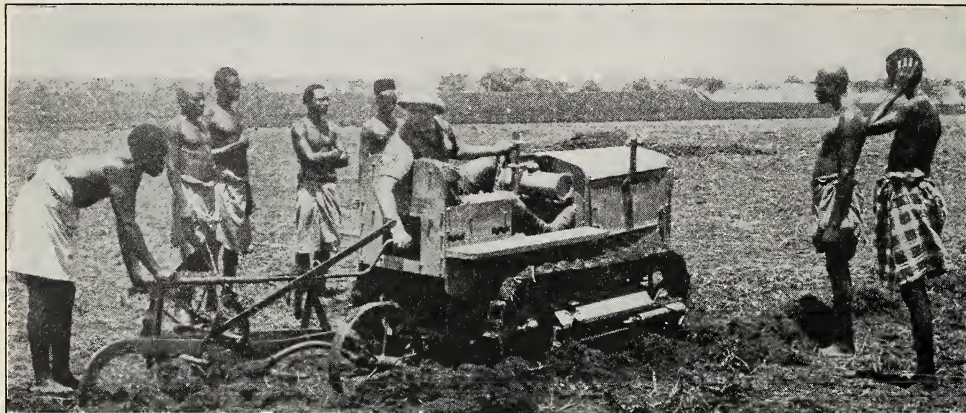
Fig. A. The "bad boy" of Africa—a bull buffalo trying to hide himself in the tall grass.

greater the number of retainers who must ride with their master to show his rank.

In the temperate section the climate is cool enough for some wheat to be grown, but millet, sorghum, and corn are grown over a large area by the inhabitants of the villages of grass-roofed houses. Most of the people live in the villages very much as they did a hundred or a thousand years ago. Ethiopia's highest zone, over 8,000 feet in elevation, produces cattle, sheep, and goats, and exports hides and skins.

Foreign trade. Caravans carry a third of the foreign trade to neighbors in all directions, but two thirds goes to the port of Djibouti (Jibuti), in French Somaliland, by the railroad which the French have built. The chief exports are hides and skins, coffee, wax, ivory, and butter. In return come cottons, roofing, kerosene, hardware, and many small things. We can get some idea of the importance of the foreign trade when we see that the railroad, which is 488 miles long, runs a train twice a week, and it takes it three days to get down to the sea, because the train does not run at night.

Future. The governments of the world's leading nations were very much concerned about the war between Italy



Courtesy South African Railways

Fig. A. Dr. Guidotto, who conducts an experimental farm for the Italian Government in Italian Somaliland, is trying to teach his natives how to run a tractor. The white man must protect his head from the tropical sun; but not the black man.



Courtesy H. L. Shantz, U. S. Dept. Agr.

Fig. B. A native grassland woman, her home, her garden, and her bread making near Lake Tanganyika. (A) Growing cassava plant; (B) fresh roots; (C) fermenting roots; (D) drying before pounding; (E) pounding to flour in mortar made of hollowed tree trunk; (F) cassava flour ready to bake.

and Ethiopia. Now that the Italians have taken the Ethiopian capital, they may establish a protectorate over the country, or they may make of it an Italian colony. The Italian Government is very anxious for more territory and Ethiopia has resources which would be very useful. What are Italy's needs which could be supplied by the resources of Ethiopia?

Ethiopia's eastern neighbors. Name Ethiopia's neighbors to the east (Fig. 278-A). To what great nations do these neighbors belong? You may think of them as hot, coastal lowlands bordering the cooler Ethiopian plateau.

THINGS TO THINK ABOUT AND TO DO

List. List the following for Ethiopia:

1. Farm crops.
2. Plantation crops.
3. Animals.
4. Exports.
5. Imports.
6. Means of transportation.

CHAPTER SUMMARY

Have you been noticing? Have you been noticing the differences between equatorial Africa and the Sudan region? Show these differences by making a table like this.

| | EQUATORIAL | SUDAN, SAVANNA, ETHIOPIA |
|----------------------------|------------|--------------------------|
| Climate..... | | |
| Vegetation..... | | |
| Wild animals..... | | |
| Farm crops..... | | |
| Farm animals..... | | |
| Plantation crops..... | | |
| Appearance of natives..... | | |
| Health conditions..... | | |
| Density of population..... | | |
| Government..... | | |
| Transportation..... | | |



Courtesy South African Railways

Fig. A. Capetown, the "mother city" of South Africa, its harbor, and port as seen from an airplane.

SOUTH AFRICA

☞ Suppose you were chosen to represent South Africa at a British Empire conference. The conference is planning for the future. You must make a speech about "The population and trade of South Africa fifty years from now." Keep the topic of your speech in mind as you read about South Africa.

THE FOUR PEOPLES

Begin with the map. South Africa is the name commonly given to that part of the continent which lies south of the Zambezi and Kunene rivers. First, look at the population map (Fig. 57-A). Next, look at the rainfall map (Fig. 56-A). In your own words, tell what these two maps show you. Examine Figure 302-A. Examine Figure 15-A and note that there is high land near the sea all the way from Capetown to the Limpopo River valley. What does the Orange River tell you about the slope of the land? This is the clinching fact — *most of the rain winds in this part of Africa come from the southeast.* How

does that explain what you have seen on the maps you have just examined and on Figure 281-A?

The Dutch. People from far-off Holland settled at Capetown in 1652. This was done by the Dutch East India Company, a great company that almost owned the Dutch possessions in the East Indies.

The British. In 1814 the British bought Cape Colony. The Dutch settlers, called *Boers* (farmers), did not like to be ruled by people whose language they did not understand; so they began to *trek* (migrate). Traveling in their ox carts, they went across the Orange River and founded the Orange Free State; they went across the Vaal River and founded the Transvaal; they went into Natal, where we see the Dutch name, *Pietermaritzburg*. But the British Empire swallowed them all up, as you can see by looking at Figure 99-A.

For a long time England had here four colonies — Cape Colony, Orange Free



Fig. A. A cross section of South Africa along latitude 30° south. Look at Figure 15-A and find the reasons for the depressions in this surface.

State, Transvaal, and Natal. The four were then independent of one another, as were our states in 1775. But in 1910 they joined together, as did our original thirteen states in 1789, and formed a new country, called the *Union of South Africa*. The Union is one of the self-governing dominions of the British Empire. Its capital is at Pretoria.

Government. We have already found that the British Empire is a great collection of kinds of government (pages 100 and 246). South Africa shows this fact. Right in the middle of the Union of South Africa is the almost independent Basutoland, which is a crown colony. The Union rules a large area of land west of the Vaal River, Bechuanaland, which is called a protectorate; it also rules Southwest Africa under a mandate of the League of Nations (page 83). Southwest Africa was once a German colony. Across the Limpopo is Southern Rhodesia, another British colony.

The peoples. The Dutch people are mainly farmers and ranchmen; the English people are mostly town men and miners. So these two races still have plenty of differences. The combined white population of all South Africa is less than two millions, while the native colored population, mostly of people called *Bantus*, is over five million.

When the Englishmen and Dutchmen wanted someone to work on their farms and plantations, the natives preferred to tend their own cattle and work their own garden patch, as their father and grandfathers had done before them. So the English and Dutch brought many Indians

to work the plantations. When their time of contract was over, many stayed. Thus there are in this one country four races, four different kinds of culture, and many languages because there are several native languages.

THINGS TO THINK ABOUT AND TO DO

New expressions to use. Use each of the following expressions in a sentence about South Africa: Boers, trek, Bantus, Dutch East India Company, crown colony, protectorate.

"A shell of a country." 1. Draw free-hand the coast line of South Africa. Show by symbols the Drakensberg Mountains. Show also the interior drainage.

2. Draw arrows from the southeast for rain-bearing winds.

3. Color the coast lands green, the interior lands brown.

4. Below, write a sentence to explain rainfall of South Africa; a sentence to explain why few people can be supported.

Four peoples and their work. Some facts about the four peoples in South Africa may be shown by copying and filling in the following outline:

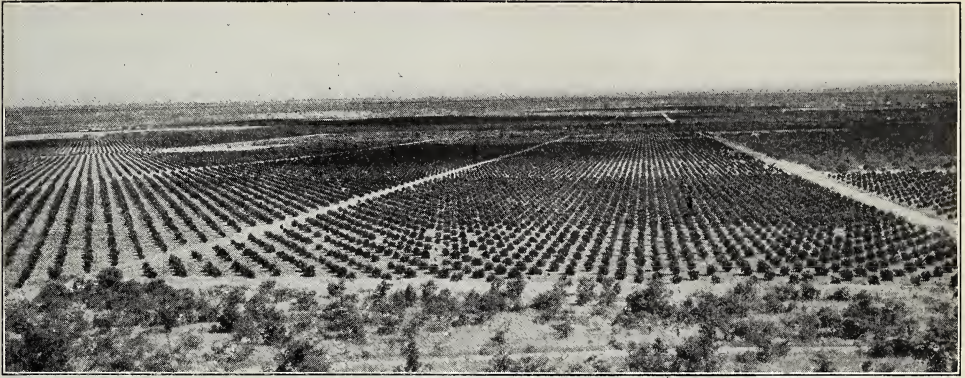
| | DUTCH | BRITISH | BANTUS | HINDUS |
|-----------|-------|---------|--------|--------|
| Work..... | | | | |

Black and white. Let one inch represent one million people and draw a little man to represent the five million blacks in South Africa; one to represent the two million whites. Write a sentence to tell how this condition causes trouble.

Match governments. Choose from list A, the name that matches one in list B.

A. Southern Rhodesia; Southwest Africa; Union of South Africa; Pretoria; Bechuanaland; Basutoland.

B. Taken from Germany after World War; protectorate; colonies across Limpopo; crown colony; mandate of League of Nations; self-governing dominion; capital of Union of South Africa.



Courtesy South African Railways

Fig. A. Some of the land with Mediterranean-California type climate in South Africa is shown in this picture. The trees are part of an orange grove.

LAND AND CLIMATE

A land of many climates. Southern Africa has several kinds of climate; it is therefore necessary for the people to have different ways of making a living.

The Mediterranean-California type of climate. The southern tip of Africa is much like the northern tip. It has the climate that we have called the *Mediterranean* climate (Fig. 303-A). Let us call it Mediterranean-California climate, because a part of South Africa is like a part of the United States.

The ocean south of the Cape of Good Hope is very stormy indeed, and in the winter season (Figs. 284-A-B) these storms come far enough to the north to bring rain to the southern tip of Africa. How large is the area having over twenty inches of rain each year? Figure 281-A shows the Mediterranean climate area where the natural vegetation has many evergreens. Most of these are shrubs, because there is not enough rain to make them grow large. In only a few places is there a good forest. As you know, this Mediterranean climate suits oranges. Unfortunately there are no snow-capped mountains here, as there are in Spain and

California. Therefore there is not much water for irrigation, but enough is secured to make oranges an important crop, and to permit peaches and plums to be cultivated. Each year in the month of March you can find in London and other European cities peaches and plums from South Africa. Thousands of boxes of oranges are shipped to Europe and to the interior of South Africa. The tropic heat and the twenty-five days' distance between Capetown and Great Britain would spoil fresh fruit, were it not for the aid of refrigerator ships.

Capetown, the second city of South Africa in population, is a fine European city, with more European than African people. Find three cities in the United States having about the same number of people (page 369). Capetown has twenty-five inches of rain a year on the average, a beautiful location, splendid parks, and a university. Many steamships come to its harbor, and you may take the express train on the main South African railroad that will carry you northward into the Belgian Congo, a distance as great as that from New York to San Francisco.

The land where the climate is like that



Courtesy South African Railways

Fig. A. An ostrich farm in the Cape Province, South Africa.

of Florida. What is the latitude of Florida? Find the part of the east coast of Africa that has the same latitude. Would you expect these two places to be like each other or different? Tell why.

This part of Africa is in the latitude of the winds called *trade winds*, which blow toward the Equator most of the year. The winds come from the southeast, so you see this part of the continent is well placed to get rain. From Port Elizabeth northward the trade wind blows upon the coast, and there is a good rainfall. The city of Durban has forty-four inches a year, *more in summer than in winter* (Fig. 285-A), but there is rain every month. This warm rain falling all the year on the warm land suits sugar cane and bananas. There are plantations of both to supply the home market, but the shore plain of Natal is very narrow, and the area of sugar cane and banana land is small. There are higher lands on the Drakensberg slopes, and in these cooler lands are plantations of tea and of the wattle trees which yield a bark rich in tannin. The whole region is naturally forested.

People from India were brought over

to work on the plantations of Natal; now that their time of contract is over, they have become market gardeners and retail merchants. They control these businesses almost entirely.

Some coal mines near Durban supply the neighboring provinces and make Durban a coaling station for passing steamers. Many shiploads of coal are also exported to India.

The Karoo and Cape Colony dry area. What is the rainfall of most of Cape Colony (Fig. 56-A)? Steppeland, with scanty grass and thorny bushes, comes almost to the sea between Port Elizabeth and the Cape of Good Hope. Much of the plateau south of the Orange River is called the *Great Karoo*. It is a ranch country, with cattle on the best parts, sheep on the poorer parts, and goats on the poorest parts. This is one of the great goat regions of the world. Many of the goats are Angora goats, whose long wool is called *mohair*. It is produced in large quantities in three places in the world: Cape Province, Texas, and Turkey.

The land that is like southwestern United States. In Orange Free State and the Transvaal, the plateau west of the



Courtesy South African Railways

Fig. A. In parts of South Africa cotton is grown as a rotation crop with corn. That is, one year cotton is grown, the next year corn. The picture was taken in the Transvaal.

mountains is called the *veldt* (pronounced fělt or vělt), a Dutch word which means field. This great plateau drains to the Vaal and Orange rivers and to the Limpopo. Trace their courses. What does the rainfall map (Fig. 56-A) tell you about the veldt?

Most of the veldt is treeless except along the watercourses. When the white men came, this land was well settled by a Bantu people called *Kafirs*. They lived in villages, kept cattle, sheep, and goats, and grew crops of drought-resistant sorghum in the moist locations near streams and near the mountains where there is more rain than farther west. Nearly every people has proverbs. Here are some Kafir proverbs that match some of our own.

"He is a calf of the old cow." (A chip off the old block.)

"The cow licks the one who licks her." (Kindness brings its own reward).

"Pots are made while the clay is in good condition." (Make hay while the sun shines.)

We have brought their sorghum (Kafir corn) to our own country and now grow it in western Kansas, western Texas, and other regions with climate like that of the

veldt. This part of Africa is much like the plains of western Kansas, Oklahoma, New Mexico, and Mexico. Farther west in Africa we find drier climate, just as we do in North America as we go on into New Mexico, Arizona, and northern Mexico.

The white man brought corn to Africa, and now both white men and natives grow sorghum and corn. Corn (called *mealies*) is the chief food of the natives. There is some surplus for export, but not very much. The climate is so dry that most of the land is ranches for sheep, goats, and cattle.

The veldt is the native home of the wild ostrich. Formerly, ostriches were put into fields, fed grain and alfalfa as we feed sheep, and caught at intervals to have their feathers plucked. But ostrich plumes went out of style, and because the ostrich is not a good meat animal the ostrich farmer found himself in hard luck.

Another Ethiopia. The highest part of the South African plateau is a high, rugged region about the size of Maryland and called *Basutoland*. This is the best part of South Africa for grass and for grain.



Courtesy South African Railways

Fig. A. Two Kafirs before their hut, arrayed in all the implements of war—shield, spear, and knobkerrie.

Its 500,000 black people are almost independent; they are farmers and raise sheep, goats, cattle, horses, corn, Kafir corn, and wheat.

In 1883 the Basuto army defeated a British army, and, though victorious, they had the surprising wisdom to sue for peace at once and to permit the British to have the appearance of victory by accepting a British commissioner as their governor. He serves as governor-general to the Basuto chiefs. The Basutos kept for themselves the *real fruit of victory*—that of getting the white man to agree *not to settle in their country*. The only white people there are connected with the government or are traders and missionaries, none of whom can own land. No one can say that the Basutos did not have intelligent leaders. When the first British governor came to take charge, the Basutos met him at their boundary and escorted him to the capital with a guard of ten thousand armed men, every man mounted on a good horse.

THINGS TO THINK ABOUT AND TO DO

A free-hand map to make this lesson clear.

1. Draw the shore line of South Africa.
2. Place crosses of different colors to

locate: the Mediterranean climate, the Florida climate, the stormy ocean, the Great Karoo, the veldt, Basutoland.

3. Draw a line to show the limit of winter rains.

4. Draw arrows to show the southeast trade winds.

Five climates, five ways of living. Copy and fill in the following table:

| | MEDITERRANEAN TYPE | FLORIDA TYPE | KAROO | VELDT | BASUTOLAND |
|-------------------------------------|--------------------|--------------|-------|-------|------------|
| Location in South Africa | | | | | |
| Other places with same climate..... | | | | | |
| Rains..... | | | | | |
| Winter months | | | | | |
| Natural vegetation..... | | | | | |
| Fruits, crops, animals..... | | | | | |
| Work of people. | | | | | |

Use these expressions. Use each of the following expressions in a sentence about South Africa:

| | | |
|-------------------------|-----------------------------|-----------------------------------|
| wattle trees, tannin | Hindus, time of contract | coaling station corn |
| Angora goats, mohair | veldt, field | Kafirs, Kafir corn |
| sorghum, mealies | summer rain | winter rain |
| watercourses | ostriches, alfalfa | Basutos, real fruit of victory |
| | refrigerator ship | forest |

Kafir talk. 1. What would a Kafir say: if a boy enjoys doing the same kind of work that his father does; if a boy is kind to an unfortunate friend; if a boy studies hard while he is able to go to school?

2. Why do Kafir proverbs mention cows and clay pots, rather than wood and hay?

Going places and seeing sights. Where shall I go in South Africa to see:

1. Fine forests.
2. Goat ranches.
3. British land with few white settlers.
4. Irrigated orange orchards.
5. A fine European city.
6. A coaling station.
7. Hindu merchants.
8. Ostriches at home.
9. Tea plantations.
10. Evergreen shrubs.

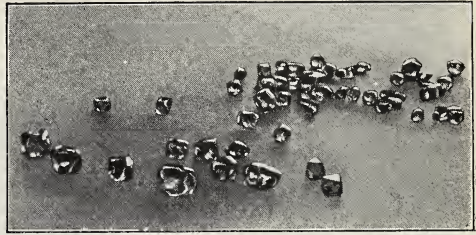
THE MINES AND THE DEPENDENCIES

The mines. Johannesburg, population 330,000, the first city of South Africa, and Kimberley, population 38,000, are cities much too large to be supported by the ranch country in which they stand. They are supported by mines.

Diamonds. In 1867, some children, picking up pretty stones on the banks of the Orange River, found a diamond. This led later to the discovery of the world's greatest diamond mines, at Kimberley. The diamonds are found scattered all through a mass of hard, bluish clay which was once a mass of lava — the neck of an old volcano. Native Africans employed by white men have for years been digging out the clay and working it over hunting for diamonds. They have thus made the deepest open pit (1,300 feet) that man has made in all the surface of the earth (Fig. 308-A).

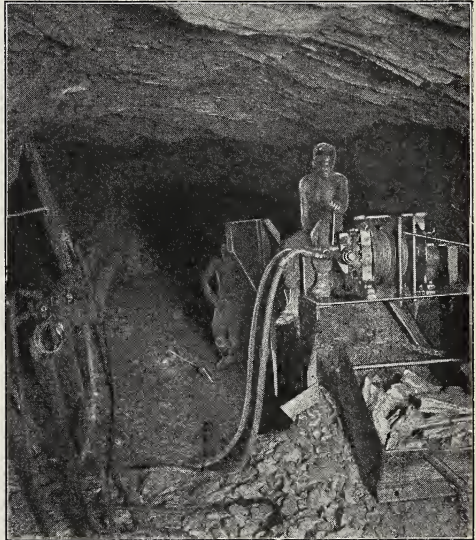
It is so easy to hide diamonds about one's person that the people who work in the diamond mines are kept behind a barbed-wire fence for a period of weeks or months, exactly as if they were prisoners. They are most carefully searched before they are permitted to go out.

Gold. The mines near Johannesburg make the Union of South Africa also the greatest gold-producing country in the world. Near Johannesburg is a ridge many miles long, called the *Rand* (Witwatersrand). Up and down the Rand are many gold mines. Trucks and automobiles run back and forth through a dusty, ugly land where black laborers are digging out hard flint stone. In the flint (quartz) is a small amount of gold. It can only be had by crushing the hard flint to powder, and fortunately for the Dutch mining companies that own the Rand, there is a coal field near by to furnish



Courtesy South African Railways

Fig. A. Rough diamonds taken from the diamond mines at Kimberley, laid on a table, and photographed.



Courtesy South African Railways

Fig. B. Many feet underground in a South African gold mine.

power for this heavy work. Here again tens of thousands of native Africans are working for the white man, and building on the veldt new mountains with the refuse that they dig out of the mines.

At the present time, Kimberley and Johannesburg produce the two great exports of South Africa. Diamonds and gold are two or three times as valuable as all the wool, mohair, hides, corn, meat, wattle bark, fruit, coal, and all the other exports together. Some day Kimberley and the Rand will have only empty holes in the ground, while men will still be



Fig. A. The largest man-made hole in the world—a section of the open workings of the Premier Diamond Mine near Pretoria, South Africa. The men in the bottom help you to understand how deep the mine is.

Courtesy Union of South Africa

keeping flocks on the dry ranges and growing corn in the damp spots of the high veldt. There is good coal near Durban and in the Transvaal, and the Union of South Africa also has large deposits of iron ore that are not now used. What might be done with these things (pages 106 and 128)? Have a class discussion on this question, "Which is of greater value to man, the South African veldt or its gold and diamond mines?"

Bechuanaland and Southwest Africa.

These two territories are as large as France and Germany and a half dozen little countries of western Europe thrown in. They have fewer people than Hamburg — less than one person to the square mile, because they are so dry. Some of the land is desert and most of it is near-desert.

At Walvis Bay, on the west coast, there is .75 inch of rain per year on the average, which means that some years they may have one good rain, and some years practically no rain at all. Port Nolloth, near the mouth of the Orange River, has two inches of rainfall. Most of the land between and for many miles inland is bare, naked desert. This happens because a cold current comes up the coast from the Antarctic. Because the land is warmer than this current of cold water, there is much fog and mist, and the wind, when it blows from the sea to the land, becomes a drying wind instead of a rain wind.

The cold water is rich in fish. There are sealing stations and one whaling station along the coast. Fish-eating birds have breeding places on rocky islands, where they live by the hundreds of thousands and make valuable deposits of guano, as birds do on the coast of Peru, where another cold current comes up from the Antarctic and makes a desert coast.

The Windhoek plateau. Windhoek, on the high plateau, has fifteen inches of rain-



Courtesy South African Railways

Fig. A. A memorial to Cecil Rhodes, near Capetown, South Africa. Who was Cecil Rhodes and what did he do for South Africa?

fall, good pasture land, and a cool climate that suits Europeans. Therefore one ninth of the quarter million people of this mandated territory are white people, who share with the natives the ranches of sheep, goats, and cattle. They also mine and export some copper and the rare metal called *vanadium*.

Eastward from Windhoek, the streams flow down toward the swamps and salt plains that are called the *Kalahari Desert*. Some parts are desert; some parts support flocks. In the eastern part of Southwest Africa and the neighboring part of Bechuanaland is the home of the Bushmen, a little yellow people who have not had the luck to develop animal keeping, as did the Arabs. They live by their skill with the bow and arrow, by hunting ostrich eggs, digging edible roots, and finding edible seeds. These interesting little wild men know the habits of every animal and every plant in their country better, perhaps, than most people of Europe or America know about anything.

Bechuanaland, five times as big as New York State, has a few Bushmen, a scattered population of cattle-keeping Ban-



Courtesy South African Railways

Fig. A. A kraal or village of native huts in Rhodesia. Cattle are pasturing in the foreground.

tus, and a few white men, who govern a little, run some ranches, dig some minerals, run the twenty-four post offices, and work on the railroad that runs to the eastern edge of the country. The people export about 30,000 cattle a year, many of them going to the miners of the Transvaal, Northern Rhodesia, and Belgian Congo, but most of the natives of Bechuanaland cultivate their patches of sorghum in damp spots, build themselves houses of grass and mud, and live their native life as they did in the long ago. There is not a single bank in the whole territory.

There is a disease that often kills horses in much of South Africa. The motor truck is therefore a great aid to such a country, but freight is still carried in ox carts that go creeping across the far-reaching plains upon which the ox finds his food. At what season of the year do you think most of the long-distance hauling by ox cart is done? Give reasons for your answer.

THINGS TO THINK ABOUT AND TO DO

Extra work for interested pupils. 1. Read in other books how diamonds are formed in the earth; how they are mined.

2. Compare gold mining in South Africa

and in the North America Cordilleras.

3. Find uses of vanadium.

List: Five minerals, three sea products, one grassland product of this region.

Why's. 1. Why are there big cities in this dry ranch land?

2. Why is it fortunate that gold and coal occur together?

3. Why has Bechuanaland few people?

4. Why is west sea wind drying instead of rain-bearing?

5. Why does Windhoek have rain and white ranchmen?

6. Why does Bechuanaland use ox carts for transportation?

Treasure hunt. What is the treasure found in the neck of an old volcano? in the rocks of the Rand? in the land of the Bushmen? on the rocky islands off the west coast? in Bechuanaland? in hard flint stone? in the cold ocean current?

CHAPTER SUMMARY

"I'm angry with you," say the people of South Africa to one another. Why are there hard feelings between the Dutch and the British? between the whites and the natives? between the natives and the people from India?

Neighbors in South Africa. Tell something of the work and the home of each of the following: Boers, Bushmen, Kafirs, Bantus, natives of India, Basutos.

Words imported from South Africa. Use each of them in a sentence so as to show that you understand its meaning: trek, Karoo, veldt, Kafir corn, mealies, Rand.

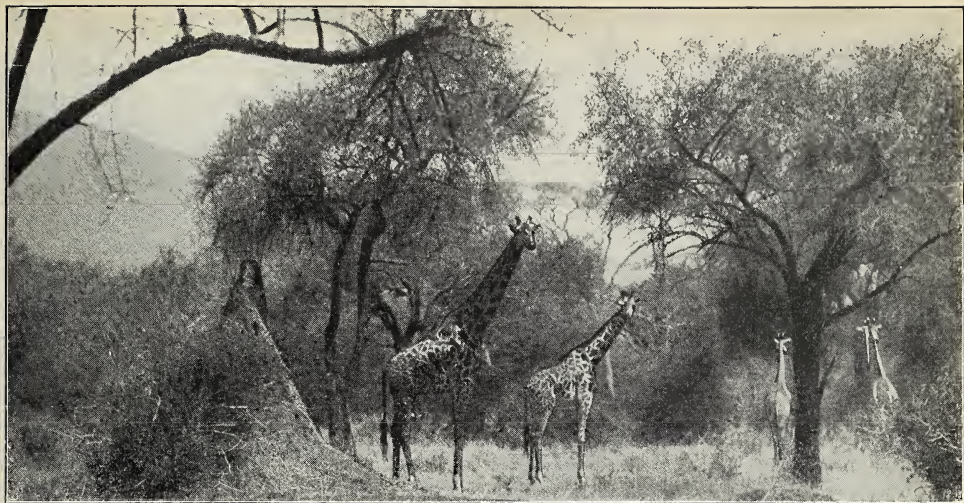



Fig. A. These giraffes were feeding on the slopes near Mount Kilimanjaro. Notice the large anthill in the left center of the picture.

By Paul L. Hoefler, from *AFRICA* by Paul L. Hoefler

TROPIC PLATEAUS OF SOUTH CENTRAL AND EAST CENTRAL AFRICA

 As you read this chapter, make a list. This part of Africa is like _____ (some other place or country). Tell what place or country and in what way this part of Africa is like it. Who makes the longest correct list?

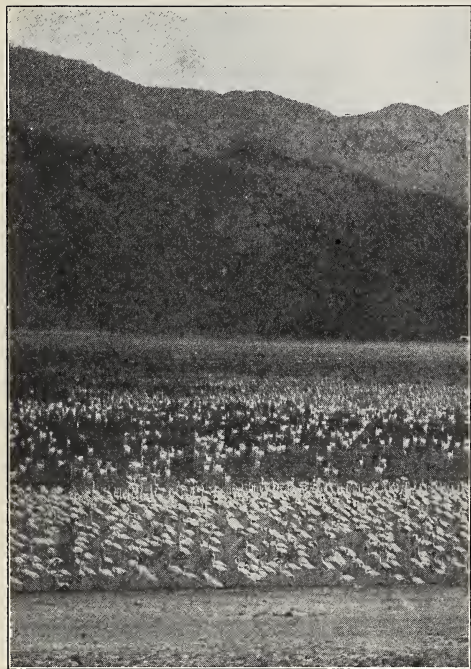
LAND AND GOVERNMENT

Grassland with a difference. We have now studied all of Africa except that part which lies between the Congo forest and Southwest Africa, between the Limpopo River and Ethiopia (Figs. 14-A, 15-A, and 281-A). We have already found (pages 283 and 284) that this part of Africa is a grassland, much like the Sudan. It has the same vegetation, animals, industries, crops, houses, and food, but there is a great difference in the elevation; the greater elevation of this southern grassland gives it more wholesome climate than that of the Sudan. Your chances of finishing a long walk in good health are much better in

the southern and eastern grasslands than would be the case if you should walk an equal distance in latitude 15° North.

The two seasons. Tell how the country along latitude 15° South would look in May and in November (page 284). As a matter of fact, if you started your trip in May you might, if you did not have native guides, die of thirst. If you began in November, you might sometimes stick fast in the soft, red mud or you might get drowned in some flooding stream, because in the rainy season the water comes down in torrents, and floods rush far and wide.

Many kinds of governments. All the land that we are studying about in this chapter is claimed as European colonies. Make a list of the colonies and the countries that rule them (Fig. 278-A). You will find in these colonies many more *governments* than there are *colonies*, and many kinds of government.



By Paul L. Hoefer from AFRICA SPEAKS

Fig. A. Countless numbers of flamingos along the shore of one of the tropic plateau lakes. The plateau country shows in the background.

Kings in Uganda. Let us take Uganda as an example of a country with many kinds of government. Uganda is close to the Equator, and its climate for the most part is unwholesome for white men. Uganda is twice as large as Maine, New Hampshire, and half of Vermont, and has twice as many people; but there is only one white man to about 1,800 natives. And so the British rule mostly through the native kings. The British want these native kings to continue to govern their people in almost every way. One of the native kings of a province in Uganda is spoken of as "High Highness." He has three native ministers to help him rule; he has a native assembly that helps him make laws. In his kingdom there are many native judges who sit in

their big grass houses and decide disputes among his people. The Africans of the grassland are rather fond of having trials. In fact, a trial in Africa is much like an American trial, with lawyers who make long speeches and call witnesses to testify. The people come to the court to see the trial just as they do in America. Some students say that most of the customs in our courts of justice came originally from Africa.

Two governments in the same country. But if it is a serious case, in Uganda the native can appeal the case to the British court. There is a British governor-general who has a *legislative council*, which helps him make laws, and an *executive council*, which helps him to carry out the laws. Also, he has a police force, with native policemen but with a British chief of police and British captains of police. He has a set of courts in which the cases of Europeans are tried, and also important cases from the native courts, just as in this country a case is sometimes carried from a lower to a higher court.

The British government of Uganda conducts schools and has a college. Mail goes out from the capital at Entebbe, on the shore of Lake Victoria, in automobiles and trucks where the country is smooth, and by runners where the country is rough. Is there a railway in Uganda? There are steamboats on Lake Victoria, and the weekly airplane mail service from London to Cairo and Cape-town brings letters from London in seven days. Uganda has five telephone exchanges, with connecting lines.

Native customs continue. In twenty-five years, the chief imports of Uganda have shifted from trinkets to machinery, and the value of the trade has increased. But, after all, most of the people of

Uganda are living in the same kind of house they always had (Fig. 313-B); they are having the same kind of garden, eating the same kinds of food that they always ate. In the southern part their most important food is the banana. In the northeastern part, which has less rain, their chief food is millet. The chief change that has come with the white man is the raising of cotton. A little patch of cotton gives the native something to sell, and the railroad carries cotton down to the steamer at the port.

A few of the natives wear some European clothes, and the foreign rulers have stopped war among the tribes.

The government of Southern Rhodesia. Take Southern Rhodesia as another example. Most of it is a high plateau, a healthful place for white men. In Southern Rhodesia live 50,000 Europeans; in other words, about one European to twenty natives. These Europeans have organized a self-governing British colony whose government is very much like that of Newfoundland or of any American state.

THINGS TO THINK ABOUT AND TO DO

A free-hand or fill-in map. 1. On a blank map trace in black the Congo and Limpopo Rivers. Show by initials:

| | |
|-------------------|-------------------|
| Southwest Africa | Ethiopia |
| Atlantic Ocean | Lake Rudolf |
| Northern Rhodesia | Southern Rhodesia |
| Uganda | Entebbe |
| | Lake Victoria |

2. Below the map answer the following: When is the rainy season at 15° South? the dry? Why is the climate more healthful than along 15° North? What wild animals might you see on your journey?

An interesting contrast. Why are there so many governments in Uganda?

Legal expressions. Use these expressions in sentences:



Fig. A. A court of justice in the grassland section of the Belgian Congo.

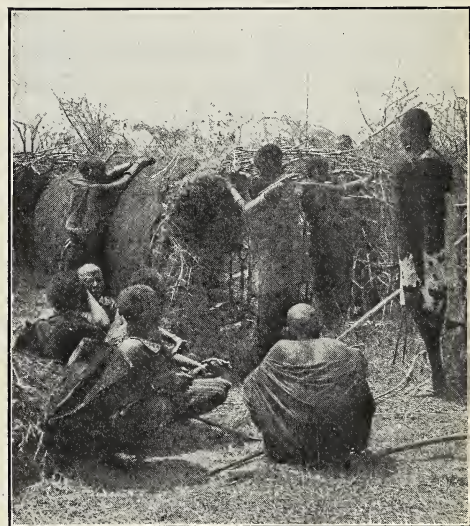


Fig. B. Native women in Uganda build a house while their husbands sit by and look on.

“self-governing British colony”

native kings
province of Uganda
native judges
governor-general
lower and higher courts
executive council

Rhodesia
native ministers
native assemblies
court
legislative council
native police
chief of police

Signs of home. 1. Write a list of word pictures that reminds us of England, even though we are in Uganda.

2. Write another list of word pictures that reminds us that Uganda is the home of the black man.

THE PLATEAU OF SOUTH-CENTRAL AFRICA—ANGOLA, THE RHODESIAS, NYASALAND, AND KATANGA

Life on the grasslands. You are already familiar with the native life of these grassland plateaus—the hut of grass or wattle work (Fig. 300-B), the little garden tilled by hand in which corn, Kafir corn (sorghum), millet, and vegetables are grown. Here the family, in its little garden patch beside the grass hut, raises the few bushels of grain that are needed for food each year. Cattle, goats, and donkeys browse the grass and shrubs.

To grow corn in a European settler's *field* is quite a different matter. There the ground must be plowed. Enough corn must be produced to feed the work animals, and to sell, in order that the owner and his hired native helpers may be paid for their work. The terribly hard rains and the thunderstorms of the rainy season often wash great gullies in the fields and the crops are injured. But the little patch of corn beside the grass hut is not so likely to be washed away.

The native village that is far from the railroad or the seacoast produces nothing that can pay the freight to the coast, and therefore be exported, except hides and skins. Therefore, most of this wide land of grain and cattle has almost no export of grain or cattle. Localities *near the railroads* in Angola and Southern Rhodesia export some corn and some cattle.

European settlers. Many parts of this highland are high enough and therefore sufficiently cool to be reasonably healthful places for the European. The white settler usually grows tobacco, cotton, or tea. Can you tell how the price per pound and the freight rate cause him to grow these crops rather than grain? A

little tobacco is exported from Southern Rhodesia and from Nyasaland. Nyasaland also sells some cotton and has a few tea plantations. The climate on the highland west of Lake Nyasa, called the Shire Highland, suits these crops.

Future white settlement. There are many thousand square miles of land in this part of Africa with an elevation of more than 4,000 feet; this land may some day become the home of many people of European race. Why is this possible?

Minerals. Parts of this region have *great mineral riches*. Both Rhodesias are rich in minerals. Gold, asbestos, chrome ore, zinc, copper, and vanadium are all exported. These products are worth three times as much as all the exports that come from the land. The asbestos from Rhodesia is said to be the finest in the world. Rhodesia is the leading producer of asbestos, whose fibers can be spun into asbestos cloth, very useful because it will not burn. There are also nickel, tin, and other minerals. Southern Rhodesia produced \$500,000,000 worth of minerals in the thirty years before 1932, and only a beginning has been made. In 1933 a rich gold field was discovered in Kenya. It may make great changes.

Coal. To work the mines of this region, engines are needed. It is very fortunate that there is coal near Victoria Falls at a place called Wankie. Coal from these mines has been shipped by rail to the coast of Southwest Africa and carried across to Argentina.

Katanga copper. The English, French, and Germans think the Portuguese are a slow people, but the Portuguese have recently begun to work diligently improving the port of Beira, on the coast of East Africa. Why? Because of the

completion of a railroad from Benguela on the Atlantic coast to Elizabethville, a mining center in Katanga, the southern province of the Belgian Congo.

This part of the Belgian Congo in the grassland possesses one of the world's greatest copper deposits. Indeed, many of the copper mines of Australia, Chile, Arizona, Utah, and Michigan were shut down in 1931, 1932, and 1933 because the black workmen of the African plateau were producing copper so cheaply that it sold for five or six cents a pound, a price never before heard of in the history of the world.

The Europeans make the native work, and this is the way it is done. They tax him. He may have to pay a tax of \$5.00 for having a house; and he pays other taxes besides. He has nothing to sell, so he must work to get the money to pay taxes. He may walk 200 or 300 miles to a mine or plantation, and when he gets there, he may work for \$2.00 a month. That makes cheap copper, cheap tobacco, and cheap corn. After some months, the workman returns home with enough money to pay his taxes and a few dollars besides. When that is gone, he must return to work in the mine or the plantation.

THINGS TO THINK ABOUT AND TO DO

Add to your map. Add: Angola, Nyasaland, Victoria Falls, Katanga, Beira and its railroad, Benguela and Elizabethville and their railroad, Belgian Congo.

Do as they do. Build a little native hut with wattle walls, using twigs and clay.

Three lists. 1. List the plants and animals found near a grassland village. What do the animals eat? Why have the native farmers no money? Do they need a railroad?

2. List the crops of European settlers on the plateaus. Why do Europeans choose to live on the plateau? Why can they sell their plantation crops so cheaply?

3. List the minerals of the plateaus.



Courtesy Consul General of Belgium

Fig. A. Mining copper in Katanga.



Courtesy Consul General of Belgium

Fig. B. A modern village for workers in the Katanga copper mines. Compare with Figure 313-B.

Why do gold miners need coal? Why are African minerals so cheap? How many of these minerals are new to you? Read about them in other books.

Some comparisons. Tell what may be going on a hundred years from now:

1. In the Indus valley where the British have recently opened the new irrigation unit that is watered by the Lloyd Barrage (page 253).

2. In the gold-mining section of South Africa.

3. In the section where the English are growing corn as described on page 314.

4. In the sections where the European has not settled.


Explain the differences you would find.



By Paul L. Hoefler from AFRICA SPEAKS

Fig. A. Lions on the plateau-grasslands of East Africa.

THE PLATEAUS OF EAST CENTRAL AFRICA—TANGANYIKA, KENYA, AND UGANDA

 The map and the water question. Do the little dotted lines in northeastern Uganda help you to find the answer to the following question: Is Lake Rudolf fresh or salt? Does the map help you to know whether or not Lake Tanganyika is fresh or salt?

The water hole. This part of the African grasslands has a dry season; it is especially dry in the northeastern part. At this season both men and animals have to hunt for water. The man hunting the wild animals knows that he can find them at the few water holes to which they must come to drink. The native knows that when the water hole dries up he can find fish, deeply buried in the mud, safe and alive beneath the hot, dry, cracked surface above them. If you want to read an interesting book about this country as it was years ago, get *African Game Trails* by Theodore Roosevelt.

Strong men and their animals. These

plateaus, like those of Ethiopia and Basutoland, are the homelands of some strong men. Some of these people are larger than any race in Europe; one tribe—the Masai—once had a rule that no young man could marry until he had killed a lion, alone, protected only by his rawhide shield and his own strong spear.

These people keep cows. A man's wealth is counted in cows. Because the lion loves to eat calves, the Masai village is protected by high walls of thorny brush, and for added safety, the calves are often kept at night in the house with the family (Fig. 296-A). The Masai love their cows. Each one has her name, and when a man's favorite cow dies, he mourns as though he had lost a child. Some of the Masai wear cowskin clothes. When they are nomadic, as is sometimes the case, the people live in cowskin tents. When a young man marries, he buys his wife with cows.

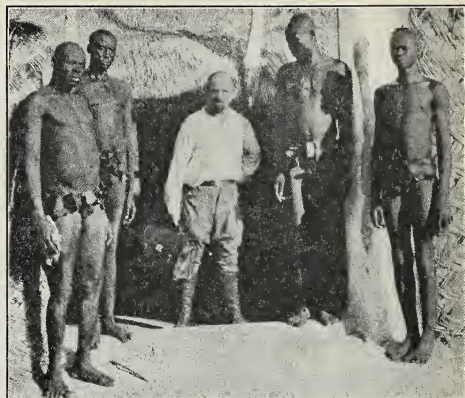
With other tribes the goat is very important. Sir Harry Johnston, who has written interesting books about Africa,

and who was for a time Governor of the British province of Uganda, said:

"But the little African goat is everywhere a favorite. In this country it, and not the dog, is 'the friend of man,' plump, sleek, tame, friendly, intelligent, cheerful. The goat is found in all villages even where no other domestic animals are kept and is much petted by the natives. The goat in Africa is an optimist; the sheep a sad baaing pessimist. The goat will make himself comfortable in any place, and will become a part of the life of his human companions; the sheep will hasten his death by loud cries, by bolting into the bush and being devoured by a leopard, or by falling sick when worn out with crying about its sad lot in life. The young and female goats are good to eat—the flesh of a young kid being excellent; but it is as milk producers that the female goats are so valuable and admirable. Their yield is not heavy but the quality is very rich. Goats will accompany a caravan on the march and give no trouble; stopping when the men stop; going on when the journey is resumed and chewing the cud in intervals of rest and always ready and willing to be milked."*

Goatskins are one of the important exports of this part of Africa.

Elevation and scenery. What does the color on the map (Fig. 15-A) tell you about the elevation of the land around Lake Victoria? These high plateaus are among the finest parts of Africa. Standing upon the plateaus are two great mountains. Find their names and their elevations (Fig. 15-A). Compare them in height with Mont Blanc and with Pikes Peak. It is amusing to think that when explorers climb a mountain in hot Africa, they pass through belts of tropic tree



By Paul L. Hoeffer from *AFRICA SPEAKS*

Fig. A. Some of the tall men about whom you read on page 316.

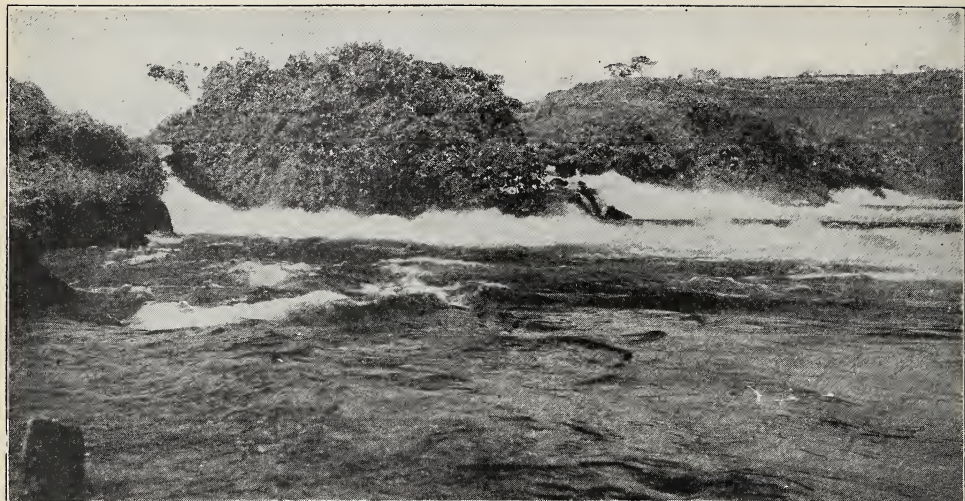


By Paul L. Hoeffer from *AFRICA SPEAKS*

Fig. B. Ngetuny Siiya (Lion's Claw) just after he had speared his first lion. See the hole where the lion bit through the shield.

ferns on the lower slopes; forest like those of Europe; moist, grassy moors like the moors of Scotland; until at last the ex-

* From *British Central Africa*, p. 432.



By Paul L. Hoefler from AFRICA SPEAKS

Fig. A. Ripon Falls, Uganda. It is here that Lake Victoria spills itself into the Victoria Nile, which leads to Lake Albert, the source of the true Nile.



Fig. B. The tractor comes to Kenya. The plants are sisal. For what is sisal used?

plorers find bare rock and fields of snow—and all this a short distance from the Equator.

In Uganda, near Mt. Ruwenzori, are many old volcanic craters; some are filled with lakes of great depth and striking beauty; not far distant is the narrow Lake Albert, from which the White Nile flows. This beautiful lake has cliffs half a mile high on its shores.

White men on the highlands. The higher lands of the east African plateaus

are good for the European, and the poor native is being pushed off his land to make way for white settlers. There are nearly 3,000 European farms in Kenya Colony. Where once the native tilled his garden and got all he grew, he now works for low wages on the white man's plantation.

Some of the white settlers in Kenya and Tanganyika have plantations of sisal and coffee. The sisal was introduced from Yucatan and grows in the drier sections, while the coffee grows in the wetter sections. Near Nairobi one can scarcely imagine that he is in Africa. Over five thousand Europeans live near this railroad station. Automobile roads go out past farms with comfortable houses like those of Europe and America. Thousands of acres are planted to coffee trees, in nice, straight rows, like the orchards of Europe and America. There are good grass, good cattle, and some herds of dairy cows of European breed. It is possible that some day there may be



Figs. A-B. Both pictures are Africa. At the right is a native chief in full costume of his rank. Above is the main street of Nairobi, capital of East Africa.

hundreds of thousands, even millions, of Europeans in this part of Africa, leaving the hotter, lower land to the black man, who can stand it so much better than the white man can.

THINGS TO THINK ABOUT AND TO DO

Why's about the plateau. 1. Why are there salt lakes?

2. Why do men and animals hunt for water holes at one season?

3. Why do the natives love their cows? their goats?

4. Why do they hate lions?

Four pairs of expressions. Use each pair of expressions in a sentence about the plateau: 1. water holes, game trails; 2. volcanic craters, beautiful lakes; 3. Masai, rawhide shield; 4. cheerful goat, sad sheep.

Higher and higher. Draw a picture of a mountain on a tropic plateau. Write between the lines names of five belts through which you pass as you climb the mountain.

Your map. 1. Add to the maps which you have started:

| | |
|----------------------|-------------|
| Uganda | Kenya |
| Tanganyika Territory | Lake Rudolf |
| Lake Victoria | Lake Nyasa |
| Lake Tanganyika | Nairobi |
| White Nile | Ruwenzori |

2. Write a sentence describing each of these places.

No one laughs. No one laughs at a goat

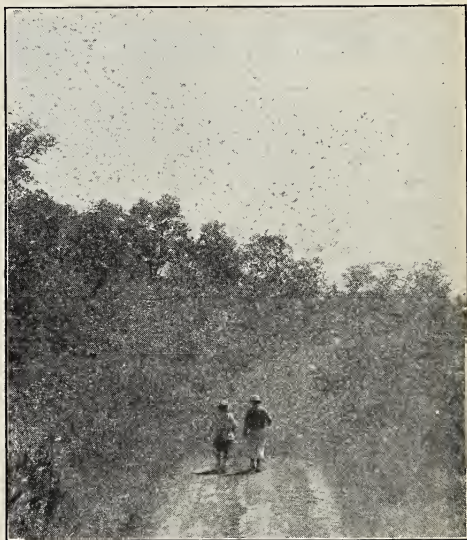


Fig. C. A swarm of locusts in Africa. They seem to come from nowhere and eat every green thing in sight.

© Ewing Galloway

on the tropic plateaus. List reasons why Africans love and respect their goats.

Give a one-minute talk. Give a talk about "white settlers of Nairobi" using these expressions: plantation crops, railroads, automobiles, cattle and dairy cows, poor natives.



Courtesy H. L. Shantz, U. S. Dept. Agr.

Fig. A. Dar-es-Salaam on the Indian Ocean, with its grass huts and towering coconut palms. It is typical of villages on many tropic shores.



© Underwood & Underwood, N. Y.

Fig. B. A native village in East Africa. A woman with wooden rammer is crushing corn for bread. The houses are built on stilts to keep away from mosquitoes, which do not fly high.

THE EAST AFRICAN LOWLANDS, MADAGASCAR, AND THE FUTURE OF AFRICA

☞ Where would you choose to have your home if you had to live in Africa at some place between the Tropic of Cancer and the Tropic of Capricorn? Tell why you choose the place you do.

THE EAST AFRICAN LOWLANDS

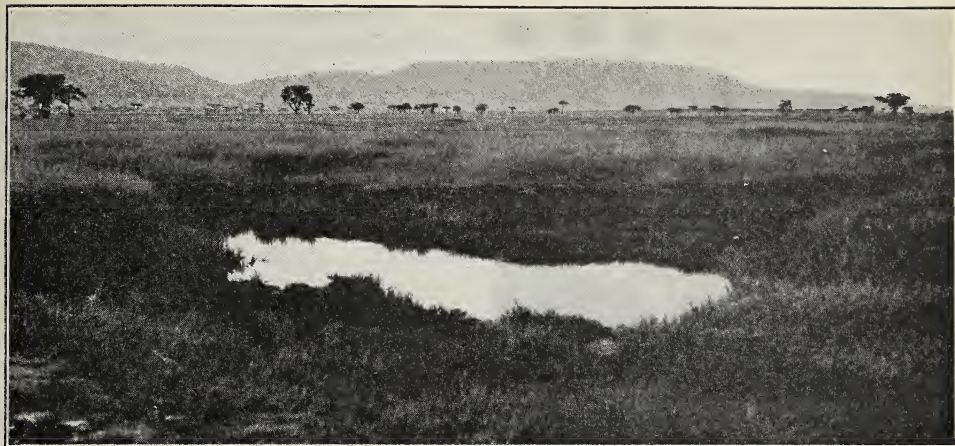
The African lowlands. In the last chapter we talked about the highlands of Tanganyiki and Kenya. Both of these colonies have also a strip of lowland along the shore with many lagoons and swamps. To the southward, in Mozambique, this lowland widens, including a large area in the valleys of the Zambezi and Limpopo rivers, and the wide plain between the rivers.

Tropic heat. This East African lowland is not white man's land. It is more nearly like the Congo forest, a land of heat, malaria, tsetse fly, fevers, and diseases; much of it is forested. We see how the white man likes it by noticing that an important port, Mombasa, from which a railroad goes to the interior plateaus, has 57,000 people, of

whom 1,200 are Europeans, while Nairobi, on the plateau, has 50,000 people, of whom 5,000 are Europeans. You can understand why the British government picked out Nairobi rather than Mombasa as the capital of the province of Kenya.

Mozambique. This Portuguese province has nearly 4,000,000 native Bantu people, a few thousand Portuguese planters, and Arab and Indian traders. Some of the natives are forced to work for fifty cents a week on the Portuguese plantations, growing sugar cane, tobacco, and coconuts, but most of the people still live their tribal life as they did before the Europeans came.

Zanzibar. In 1931 Zanzibar Protectorate had 278 Europeans, 14,000 British Indians, 33,000 Arabs, and 180,000 Africans of many races. The city of Zanzibar, with 45,000, is a port of call for many steamers, and the Indian traders there control much of the trade of East Africa. Most of the other people in the province are farmers living in grass-roofed houses sur-



By Carveth Wells from Milwaukee Public Museum

Fig. A. Water hole, grasslands, and savanna—a typical scene in the African and Madagascar grasslands.

rounded by gardens and trees. They grow nearly all of the world's supply of cloves. There are nearly 50,000 acres of clove orchards, 3,000,000 trees, and the total output is about 10,000 tons per year. Large plantations are owned by Arabs, and little plantations are owned by Negroes. Coconuts are second in importance.

MADAGASCAR

Mountains, high plains, low plains. Madagascar has three kinds of land. There are mountains near the east coast and high plains in the center. Much of this upland is good grassland.

The southeast trade winds blowing against the mountains some miles inland give the east coast a true tropic forest. In this moist climate are grown rice and vanilla for export. The vanilla is the bean of a climbing vine that likes the hottest, dampest climate in the world.

The low southwest coast, with a mountain backstop to keep away the moisture-bearing trade winds, receives but little rain and is a land of poor pasture. You will note that it is in the same latitude as the Kalahari, which it resembles.

Three kinds of people. The natives of Madagascar, called Malagasies, consist of many different tribes. Some of these peoples are descended from Malay boatmen from the East Indies who long ago made the long journey across the Indian Ocean and settled on the east coast of Madagascar. Other tribes are more like the Negro races of Africa. It may be that these tribes were already living in Madagascar before it became an island. The language of all the tribes has now become almost the same, although it is divided into many different dialects. Recently the French conquered the island; there are now some 18,000 French ruling about 3,000,000 native people.

Most of the people live on the plateau; they are farmers and keepers of cattle, like the men of the good grasslands of Africa. The Malagasies of the grasslands are more interested in cattle than schoolboys are in baseball or football. The island has more cattle by far than has Texas. Its chief export is vanilla from the moist eastern lowland. Other exports are hides from the grasslands; frozen and canned meats prepared in factories run by



Fig. A. A mission school for natives in the Congo.

the French; raffia, coffee, and butter beans from the highlands; and graphite, of which there are some rich mines.

THE FUTURE OF AFRICA SOUTH OF THE SAHARA

Going to school. We might say that the people of Africa are going to school. Their foreign rulers are teaching them to run governments, plantations, railroads, and machinery. There are, altogether, thousands of schools where native Africans are being taught European learning. Some Africans go to other countries to be educated. Some day these people may surprise the world by showing how much they have learned and how well they can use what they have learned.

What will be the future trade of Africa? For a long time white managers and black laborers will be opening in Africa new plantations in the forests and irrigated valleys, new ranches and farms in the grasslands, and new mines wherever good ores may be found. The people of Africa, no matter what their color, will want to buy some of nearly everything we have in Europe and America, and they will pay for what they buy with minerals, forest products, and farm products. Her people are not yet ready

for factory work, and the continent has but little coal. But there is water power. Africa leads all continents in water power.

Victoria Falls on the Zambezi is one of the great waterfalls of the world, but the rainy season and the dry season give it sometimes very high water, and at other times, low water. The Congo is different. It has by far the most marvelous water power in all the world (Appendix). Look at rainfall maps (Figs. 284-A-B). When do the north branches of the Congo have the heavy rain? When do the south branches of the Congo have heavy rain?

This movement of the rainy season in Africa never gets out of the Congo basin. Therefore we may say that the river is always in flood, and as it tumbles down from the plateau, it makes water power in great quantities. The people of America and Europe think of Niagara as being the greatest producer of water power, but the Congo has a dozen times as much (Appendix) more power than we make in all the power plants of America.

We have already begun to build houses in the United States in which the air is both cooled and dried, or moistened to make inside the building a climate that is the best in the world. Really, this idea does not differ from that of heating houses. Some day, this idea may be applied in Africa; the result may be great manufacturing cities near the mouth of the Congo which may furnish the power to cool the houses, light the city, and drive the machinery in its streets, houses, and factories. In such a city, nearly everyone would live and work indoors in weather like that of a bracing fall day or a nice spring day.

Some day, perhaps, we may learn how to carry Congo power to Capetown, or even to Europe.

THINGS TO THINK ABOUT AND TO DO

Mapping Madagascar. Draw an outline map of Madagascar. Shade in colors to show lowlands and highlands. Show trade winds by drawing arrows to the coast. Write F, R, V, C, to show where forests, rice, vanilla, and cattle are grown.

People and more people. 1. List: 4 kinds of people of Mozambique, 4 of Zanzibar, 3 of Madagascar.

2. Beside each write the kind of work the people do; as, Arabs, trade; etc.

Add to your map: Mozambique, Zambezi and Limpopo Rivers, Mombasa, Nairobi, Zanzibar, Mozambique Channel.

Almost every day. 1. Almost every day we see these products in the store: cloves, sugar, tobacco, canned meat, vanilla, coconuts, rice, graphite (for lead pencils), hides.

2. Tell where these products might have come from in Africa.

Beheaded sentences. Rewrite the following, adding endings that will make correct sentences.

1. The East African lowland is like the Congo forest because

2. White men would rather live in Nairobi than in Mombasa because

3. The British capital is at Nairobi rather than at Mombasa because

4. The Falls of Zambezi will never be very useful because

5. The Congo Falls have power all year because

6. Eastern Madagascar is forested and western Madagascar is poor pasture because

CHAPTER SUMMARY

A jig saw puzzle map. Let half the pupils in the class copy in colors the political map of Africa (Fig. 278-A). Let the different colors show which nations of Europe own the different parts of Africa. Paste the maps on light cardboard. Cut the map apart along boundary lines of the political divisions. Put the scraps into envelopes, and let the other half of the class fit the pieces together. If the second group of pupils starts and stops on a signal, you can make a race of this exercise.

A map of regions. 1. Use a blank map of Africa, or one that is traced or drawn free-hand. Use different colors to show the regions that we have studied.



Fig. A. A native choir at a mission school in South Africa. This picture and Figure 322-A show what the white man is trying to do for the black man in Africa.



Courtesy South African Railways

Fig. B. A Kafir woman repairing the family pot in South Africa. These native women are skilled in the art of pottery and manufacture their own cooking utensils.

2. Below the map write a few sentences to describe each region.

A map of animals. Draw a big free-hand map of Africa for your bulletin board. Let each pupil draw or cut a few of the different animals of Africa. Paste them on the large map, where they belong.





Fig. A. From these two maps tell why Australia is referred to as "the world's lost corner." Trace a trip around the world, naming each body of water through which you sail.

AUSTRALIA AND THE PACIFIC ISLANDS

THE WORLD'S LOST CORNER

Using the Globe. Take your school globe and look at it in such a way that Australia is straight before your eyes. Now turn the globe until England is straight before your eyes. Tell about the near neighbors of Australia and of England. Perhaps you can now tell the reason why Australia was not discovered by Europeans until long after America was discovered.

This part of the world was also hard for other men to find. In the long ago, people seem to have got into their boats and gone eastward from Asia, scattering both to the northeast and southeast. We have already read about some of these groups of people (page 266) — those who left India and southern Asia and settled all the East Indies west of Papua.

The other stream of people seems to have started out farther north, perhaps going to the Philippines and then on eastward into the Pacific. They went to Tahiti, Samoa, and Hawaii, a very long time ago. When the white men first found these "boat people," they were making regular trips in their open boats

from Hawaii to Tahiti. Six or eight hundred years ago, some of the boat people, called *Maoris*, settled in New Zealand, but they never found Australia. It was 1200 miles away, and the winds blow from the west most of the time.

That left Australia, Papua, and some islands east of Papua occupied by the original black people (Fig. 265-B). No one knows where they came from nor when they got there, but there they were, off in their lonely corner of the world with no neighbors.

THINGS TO THINK ABOUT AND TO DO

Sketching the Pacific Islands. Draw a sketch map of Australia and the Pacific Islands. Show parallels and meridians, Papua, the Philippines, Hawaii, Tahiti, Samoa, New Zealand. Show migrations by lines of arrows.

Circles of neighbors. 1. Use Figure 324-A. Cut a narrow strip of paper 500 miles long, according to the scale. Slide the strip with one end always touching the coast of Australia, so that the strip will pass over neighboring lands within 500 miles. List these neighbors as the strip passes over them.

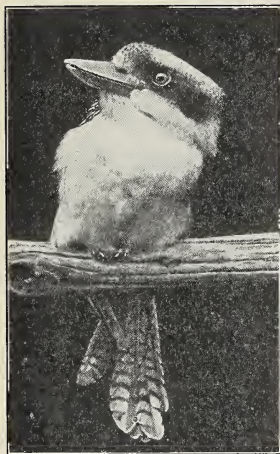
2. From the Appendix, find their separate populations. How many people within 500 miles of Australia?



Fig. A




Fig. A



Figs. A, B, and C. At the right is a lyre bird. Why is it so named? In the center is a wallaby, or bush kangaroo with young. At the left is a kookaburra or laughing jackass.

AUSTRALIA — A STRANGE CONTINENT

 Here is something for the class to do. See how much rain falls near your school while you are studying about Australia. Get a tin cup or some other vessel with straight sides and a flat bottom. Put it in an open place, so that it will catch all the rain that falls. A good place for it is on top of a fence or on the flat roof of some low building, where the cup cannot fall and will not be disturbed. Every morning measure the amount of water in the cup. This will show how much rain fell during the past 24 hours. Keep a careful record in your notebook of the amount for each day. Also make a chart like Figure 330-C. If one inch of rain falls in a certain 24-hour period, make a line a quarter of an inch long. Measure at the same time every day.

When you have finished the study of Australia, answer this question: Will Australia ever have as many people as the United States?

Things not found elsewhere. Australia is a kind of lost corner for plants and for animals, as well as for men, because things that died out in other countries kept living on out there in Australia, so far from any other continents.

Ancient plants. Plants that lived and

died a long time ago are sometimes preserved in the rocks in the form called *fossils*. Fossils tell us that coal is often made in large part from tree ferns. Australia still has forests of tree ferns and other plants that have died out in other parts of the world. Australia has one great family of very useful trees, called *eucalyptus*, not found *wild* in any other continent.

Useful eucalyptus. There are three hundred kinds of eucalyptus. The wood of some varieties is very valuable, an oil is made from the leaves, and the trees grow seven times as fast as oak trees. Therefore they have been planted and are now growing in some part of every continent except Antarctica.

We think of a woods or forest as a place that is shady, but from Australia we get a different idea. Walk into a eucalyptus forest and you will see big, bare, white trunks of trees that have shed their bark. The trees are tall, but they make little shade because their leaves are set edge-wise to the sun. By that means they keep cooler and give off less water. Since

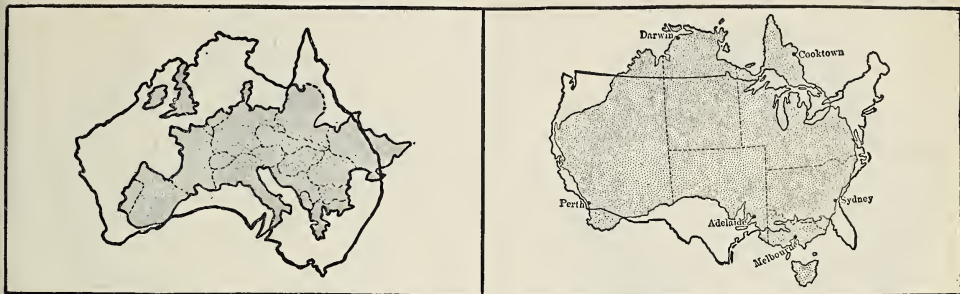


Fig. A. Tell what these maps show about the size of Australia.

light comes through the trees, bushes and grass grow beneath them.

We think of forests as green, but in Australia many of the leaves are gray.

A lost corner for animals. Most of the wild animals of Australia are not found in other parts of the world. Nor does Australia have lions, tigers, elephants, giraffes, or big animals such as we find in Asia and Africa. The most common animal is the kangaroo, of which there are more than a hundred species. These animals jump along with their hind legs, and sit up, balancing themselves on their tails. They are cousins of the opossum, and are interesting because their young are very tiny when born, and the mother carries them around in a pouch or pocket.

A lost corner for men. We have already learned (page 50) how people traveling about the eastern end of the Mediterranean Sea met and learned many things from one another. By thus exchanging information about the arts, the alphabet, and many other things, men finally learned to read and write, to make fine things, build roads and cities, and found states.

The Australian, living far from other peoples, had no chance to learn new things as had the Mediterranean peoples. He had another great handicap — his country suffered much from droughts.

So, when the white men found him, he was still living in what is called the *Stone Age*.

Rainfall and discovery. Look at the rainfall maps (Figs. 330-A and 330-B). What do they tell you about the plants and the kind of country you might expect to see if you sailed into Shark Bay on the west coast? What plants would you expect to find along the coast of the Great Australian Bight (Fig. 331-A)? It so happened that the first Englishman who saw Australia sailed along the dry part of the west coast, and the second Englishman sailed along the dry part of the south coast. Very rightly both said, "This is no place for an Englishman to settle and try to be a farmer." No other Englishman came for more than fifty years.

Colonies and commonwealth. In 1770, an Englishman, whose name was Captain James Cook, sailed into the harbor of Sydney and there saw the big eucalyptus and other fine trees. The first settlers came soon after. Others followed, until there were six British colonies — Queensland, New South Wales, Victoria, Tasmania, South Australia, Western Australia. Finally these six colonies, now called *states*, united to form one country, which they call the *Commonwealth of Australia*. The territory of Northern Australia is now also a part of this Common-

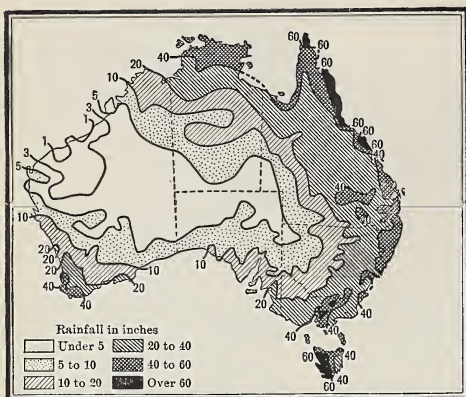


Fig. A. Rainfall in Australia during a good year.



Fig. B. Rainfall in Australia during a poor year.

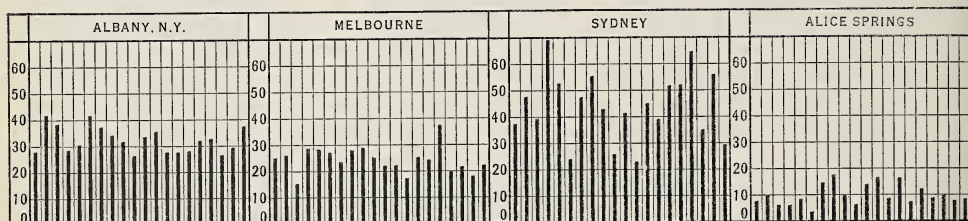


Fig. C. Rainfall in inches by years for 20 years. Can you figure the percentage of variation?

wealth. Australia is governed very much as the United States is governed, or Canada, or the Union of South Africa.

Rainfall and population. A hundred years ago the Australian settlers said that by this time their country would have 50,000,000 people. How many has Australia today (Appendix and Fig. 57-A)? Why are there so few inhabitants when they expected so many? This is a very interesting question. To answer it, look again at the rainfall map (Fig. 56-A). The farmer needs at least 20 inches of rain each year for his crops; he should have more. That map shows the *average* of the number of inches of rainfall each year. Now look at Figures 330-A and B. What do those maps tell about the rainfall of two different years? Suppose you owned a sheep ranch on the northern coast of Western Australia. Tell how you think it would look in the two different years.

Describe the rainfall of southern Queensland in each of the two years. Now look carefully at Figures 330-A, 330-B, and 330-C. What do they tell you about the regularity of rainfall at Albany, New York, and at Sydney, Australia? As you read about Australia, you will learn what *irregularity* of rainfall does to people.

THINGS TO THINK ABOUT AND TO DO

Make an Australian dictionary. 1. Make an Australian dictionary by writing a definition of each of the following expressions: fossils, tree ferns, eucalyptus, kangaroo, Stone Age, irregularity of rainfall.

2. Add to your dictionary definitions of new expressions as you study Australia.

3. Find or draw pictures for your dictionary of as many of your definitions as you can.

Begin a fill-in map of Australia. Divide it into six states. (Notice how the boundaries follow parallels and meridians.) Locate by initials: Shark Bay, Great Australian Bight, Sydney.

AN AUSTRALIAN SHEEP RANCH

Sheep and rainfall. Before you begin this unit, find how big is an acre of ground. To do this, measure off a piece of land that is 209 feet long and 209 feet wide. If you cannot find so much land, you can at least measure off 209 feet in a straight line.

Let us begin by looking at three maps. Look first at the rainfall map. How much rain falls in central Australia? Less than ten inches of rain in a year means *desert*. This one is a hot desert. Here the thermometer in some places often registers over 100° in the shade every day for weeks at a time. At Alice Springs there is at least one day nearly every year when the thermometer reads 115° . In that area, where there is less than ten inches of rain, many men have died of thirst and starvation while trying to explore the country. Some parts are still unexplored. There are vast spaces where no one lives.

Sheep and vegetation. The second map that we look at is the vegetation map (Fig. 331-A). It shows forests around some of the coasts of Australia at the same places where there is much rainfall on the rainfall map. Between the desert and the forest is a land where some bushes grow and where some grass grows. The grasslands are better toward the coast and toward the forest lands. There the rainfall is greater, the grass is higher, and the bushes are larger and closer together. As we go on from the desert toward the land of greater rainfall, we presently come to places where there are scattered trees in the grass. This land of bushes and grass is good for grazing sheep, although much of it is too dry for wheat.

Australian sheep land. The third map for you to examine is the sheep map

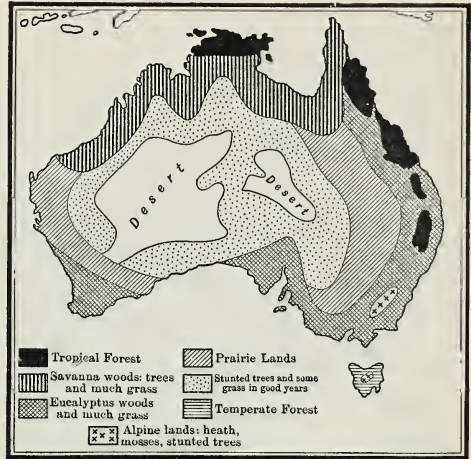


Fig. A. After you have read this page, tell about this map.



Fig. B. Map showing where sheep are raised in Australia. Each dot stands for 10,000 sheep. Why is it that no sheep are raised in the central part of Australia?

(Fig. 331-B). What kind of vegetation grows where sheep are found?

If you look again at Figure 327-A, you will see that only a small part of Australia, within the eastern mountain range, has streams that reach the sea. Make a sketch map and shade this part. Add to your map the Murray and the Darling, and some other rivers of the Murray-Darling river system.



Courtesy Commissioner for Australia

Fig. A. A sheep dip in Tasmania. The sheep start from the pen in the background, swim through the liquid in the long, narrow tank, and walk out of the tank into the pen in the foreground. The men push the sheep's heads under the liquid. Why?

Some of this land in the eastern part of the Murray-Darling basin is called the *Darling Downs*, and is very fine sheep pasture.

A "sheep run." Let us visit a sheep farm in the Darling Downs. We enter by a white gate in a wire fence. Far away across the flat land we see another white gate. We drive our automobile toward it. Beyond that is another white gate, and then another. It is several miles from the first gate to the farmhouse. The Australians call a sheep farm a *sheep run*. They call the house and nearby buildings a *station*. This sheep run has many thousand acres, and the station seems like a village. The owner's house is one story high, built of stone, with porches around three sides. In the living room is a grand piano, and on a table are many books and magazines. The owner

lives so far from the neighbors that he must find entertainment in books and music.

In front of the house is a lake made by putting a dam across a stream. Here ducks and geese are swimming, and a windmill pumps water to a large tank on the roof of the house. This supplies the house and gardens with water. Beside the house are a vegetable garden, a fruit orchard, and a smaller house for the manager of the run. Beyond are cottages for workers who have families, and also a big hall where the unmarried men live. The unmarried men are sometimes called *jackaroos*, because that is the native word for bachelor. These unmarried men work on the farm. Some are young men who came here to learn the sheep business. The young men may become managers of sheep runs, or even owners, if ever they

get money enough. A Chinese cook keeps house for the bachelors.

Since it is miles to any other station, there is a school for the children. If the owner's children wish to go beyond the sixth or seventh grade, their father must get a tutor for them. Finally they may go away to boarding school at Sydney or Melbourne.

An important member of the station is the storekeeper. Besides selling things, he keeps the records of the wages of the workers and the accounts for the farm.

Across the creek from the house is a very dark green field. In the field is alfalfa, a kind of grass that makes very good hay. The alfalfa will be cut for hay, put in stacks, and kept to feed to the sheep some year when there is a drought.

A farm without barns. In many parts of our country, hay would be put in a barn and used as winter feed for the animals. In Australia the weather is so warm that grass grows all winter if there is rain; the sheep, therefore, live out of doors. When it rains, the sheep do not get wet, for their greasy wool sheds water. If you want to see what water will do to grease, get a greasy cloth, put a few drops of water on it, and see what happens.

This sheep run is really a large ranch containing thousands of acres of land. Fences divide it into fields called *paddocks*. Some of the fields are as large as a township, or even as large as a good-sized county in the United States. Altogether the sheep run may have two or three hundred miles of wire fence around its various fields.

In the morning, some of the men get upon their horses and ride away in different directions. They are *boundary riders*. They ride along the fences to find holes. They carry wire, pincers, hammers, and staples to be used in mending fences. If

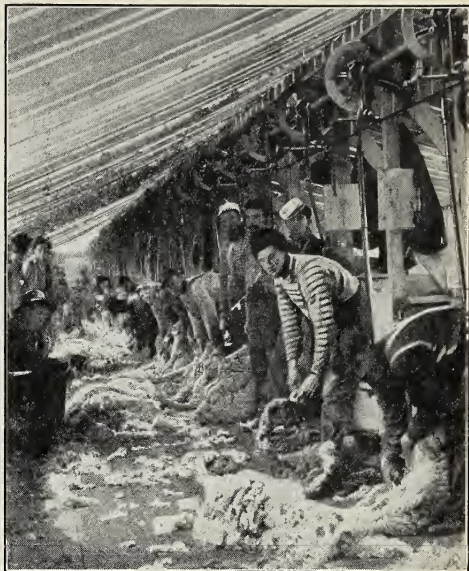


Fig. A. In the shearing shed. The shearers are clipping the wool from the sheep. Tell how their shears work.

the hole is too big for them to mend, they will report it to headquarters when they return in the evening, and the fence repair gang will mend it the next day if possible. The boundary riders will tell the manager how the sheep are getting along, the condition of the pasture, and how much water there is in the water holes where the sheep drink. It takes a lot of work to keep two or three hundred miles of fence in order, and to replace it when it is gone. Some men are busy all the time moving sheep from one pasture to another, while others cut bushes and weeds that sheep will not eat.

Shearing sheep. There is also a shearing shed at each station—a long, low building with a tin roof. The shed is empty except at shearing time. This comes in the spring, and is the busiest time of the year at a sheep station. Shearing sheep is hard work. It is done by teams of men who travel from station to station.



Courtesy Commissioner for Australia

Fig. A. In Australia the sheep ranches far in the interior are called *back blocks*. One of them may cover 100,000 acres. It takes days and even weeks for the bullock drivers and their teams to get the wool to the nearest railroad. If the climate suited, could they have a dairy farm in such a place?

When shearing time comes, the men at the station drive up the sheep from the paddocks, and the team of sheepshearers takes charge of them. Some of the men are called *penners-up*. They drive the sheep into a shed in bunches of fifty or a hundred, catch them, and hand them to the shearers. The shearers stand in a row along the wall, each holding a sheep. In the end of the shed is an engine. Overhead is the turning shaft which runs the clippers. These clippers, in the hand of the shearer, are much like those that the barber uses, only larger. The shearer holds the sheep's head between his knees, runs the clippers down the sheep's back, down its legs, down its sides, under its stomach. In about a minute, the sheep's fleece lies like a torn coat on the floor. The penner-up takes the sheep out and brings another sheep to the shearer.

Branding and dipping. After the sheep are shorn, the men on the sheep run brand them with black paint, thus giving

them the owner's marks. The sheep are then dipped in vats of strong-smelling liquid, to rid them of ticks or fleas or diseases.

THINGS TO THINK ABOUT AND TO DO

Talk sheep language. Use each of the following new expressions in a sentence: Darling Downs, sheep run, station, jackaroos, alfalfa, paddocks, boundary riders, head-quarters, water holes, shearing shed, penner-up, staples, barns, windmills, lonely life, ticks, dipping, storekeeper.

Lost in Australia. "It is 110° in the shade. Skeletons of men who have died of hunger and thirst are around me. There is sand as far as I can see. Where am I?" Play that you are lost in other parts of Australia. Give three clues as above, and see if the class can find you.

Choose your occupation. Choose your occupation if you went to Australia. Explain your choice orally or in writing.

Sheepish why's. 1. Why are sheep raised only in certain parts of Australia?

2. Why do sheep need no barns?

3. Why are sheep runs so large?

THE SHEEP INDUSTRY AND THE TRADE IN WOOL AND MUTTON

Wool, the chief export of Australia.

Sheep have been very important to the people of Australia for a long time. For the last seventy-five years the Australian people have had about fifteen sheep for every man, woman, and child who lives in Australia. To see the importance of sheep, we must remember how far Australia is from the great markets, like New York, Chicago, and the cities of Europe. In the days when it took a sailing vessel five or six months to go from Australia to Europe, what could the people of Australia send back that would carry well, pay the freight, and leave the owners a profit? Only valuable things, such as gold, copper, wool, and skins—things that are worth many cents a pound. For this reason, wool has been the chief export of Australia since long before you were born.

Wool sheep and mutton sheep. There are two classes of sheep: one class is called *wool sheep*; the other is called *mutton sheep*. Of course both kinds really do have wool and mutton, but the mutton sheep is a big, fat, round fellow with much flesh on him (Fig. 337-A). It takes good grass to fatten him, and his wool is rather coarse. The wool sheep is a little skinny animal, and his wool is very fine. Instead of having a smooth skin that fits him neatly, the wool sheep, called the *merino breed*, has a loose, wrinkled skin. This just suits the wool grower. The mutton sheep, with a neck six inches long, has only six inches of neck wool; the wool sheep, with a neck six inches long, may have wrinkles enough to make ten inches of wool-covered skin on his neck, and his wool is fine and soft and sells for a higher price a pound than the coarser wool of the mutton sheep.



Fig. A. Australia—the lonely continent. This globe also shows one reason why wool is a leading export of Australia. Read the page and find the reason.

In the days of sailing vessels, Australia was too far from other countries to send mutton, but she could send wool, sheepskins, and tallow for the soap maker. There is another reason, too, why most of the sheep growers of Australia prefer the wool sheep. That reason is the droughts. Sheep can live and grow a coat of wool on poor pasture in places where they cannot possibly get fat enough to make good mutton.

Sheep runs move westward. After the Australians had learned how to grow sheep on the land east of the dividing range near Sydney, they founded one big sheep run after another to the west of the mountains. They laid out sheep runs as far as the drought would let them go. The only way they could get water for the animals to drink was by building dams, which they call *tanks*. When it rains, the tanks are filled with water, and there the sheep come to drink. Sometimes the great droughts come. There is no rain to make grass and no water to drink, and the poor sheep starve to death. Millions have died in this way.

Artesian wells. The deaths of sheep from drought in Australia would be greater than they are if it were not for artesian wells.

A large part of the interior of Australia (Fig. 336-A) is what is called an *artesian basin*. It is fortunate for the sheep and cattle stations that these wells give water in a large area of the interior of New South Wales and Queensland where there are no streams. If also some food can be saved for them, the animals will be able to survive. One of the things being done more and more frequently is to cut some hay in seasons of good rain, build haystacks, and keep them until the droughts come.

The Australian trade in wool. Some of the Australian sheep stations are as much as two hundred miles from a railroad. In such far-away places, one of the greatest jobs of the year is to haul the wool to the railroad. If any sheep are sold, they walk to the station.

Australia has about one hundred million sheep—a little less than twice the sheep the United States has. Yet there are in all Australia not as many people as are in New York City.

In a recent year, Australia sent to other countries an amount of wool that was as great as the weight of all the people in Australia—even more than this, for it was 131 pounds for each person. This wool sold for enough money to give \$30 to each person in Australia. Most of

this wool went to Europe, but some of it came to the United States. There is probably no county or town in the United States where there is not some Australian wool in some person's clothes.

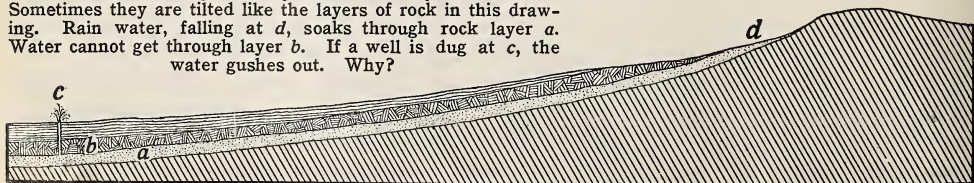
Frozen mutton. The steamship with refrigerator chambers has made a great change in Australian trade. Each year millions of mutton sheep are slaughtered, frozen stiff in cold-storage plants, put in ships with refrigerator chambers, and carried far across the oceans to Europe, where they arrive still frozen as hard as bones. Most of the meat, and more than one third of the wool, goes to England, the mother country.

The "plague of rabbits." One of the great troubles of the Australian sheep owner is what he calls the *plague of rabbits*.

An English settler, who wanted some pets, took rabbits to Australia. Some of them got away and ran wild. In most of Australia there is never freezing weather. The open winter exactly suited rabbits. They ate grass and thrived. Mother rabbits have four or five families a year; often they have four, five, or six young ones at a time.

Soon there were thousands, then there were millions and tens of millions of rabbits. Rabbits ate all the grass in whole districts, and in time of drought, they dug up the roots of the grass. They even ate the bark from bushes and trees. In times of drought they died as the

Fig. A. Beneath the soil are rocks. Some of the rocks near the surface are arranged in layers like the layers of a cake. Sometimes they are tilted like the layers of rock in this drawing. Rain water, falling at *d*, soaks through rock layer *a*. Water cannot get through layer *b*. If a well is dug at *c*, the water gushes out. Why?



sheep died, and their dead bodies seemed to be everywhere, but when the grass came again, the rabbits were there too. It seemed as though they would drive the people and the sheep from Australia. People tried to catch them with dogs, but still the rabbits increased. They tried to poison them, but that poison only killed the birds. They tried to find diseases for the rabbits, but Mr. Bunny would not get sick. Then the people settled down to fight.

The government paid bounties of so much money for every rabbit that the people killed. As that did not stop them, they next built wire fences to stop the rabbits from spreading all over Australia. In New South Wales there have been built more than 140,000 miles of rabbit-proof fencing at a cost of more than \$40,000,000. Where the fence crosses roads, there are tight gates. Anyone who is caught leaving a gate open, is made to pay a heavy fine. The Australians decided to make the rabbits help pay for the fence. They export tons of them frozen to the United Kingdom for people to eat, and send the skins to be made into hats and fur garments. In a recent year, eight million rabbits were exported, and nearly 7,000 tons of skins were exported to be made into felt hats. The frozen rabbits and the skins were worth \$16,000,000.

THINGS TO THINK ABOUT AND TO DO

"Sheep cousins." Write all the differences which you can think of between the sheep cousins: Mr. Wool Sheep and Mr. Mutton Sheep.

New expressions. From the book, copy short sentences, or parts of sentences, that use the expressions: merino sheep, tallow, dividing range, station tanks, refrigerator, rabbit fence, pay the freight, long voyages, wool per person, sheep per person, population of Australia, pay a fine, west of Sydney, plague, freezing weather. Explain to the class what each sentence means.

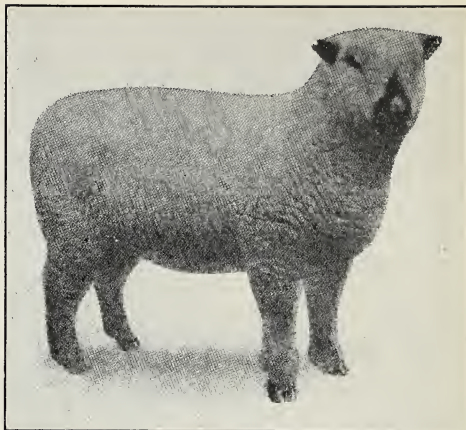


Fig. A. A "mutton" sheep.

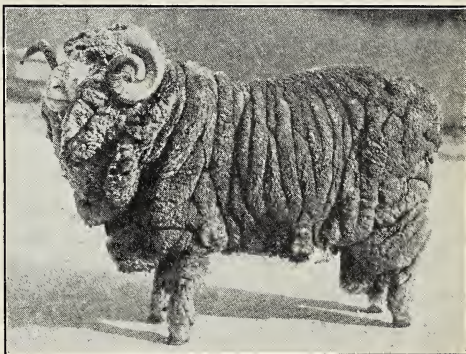


Fig. B. A "wool" sheep.

A silent picture. 1. Make a picture that explains why water flows from an artesian well.

2. Write a short paragraph that will explain artesian wells, artesian basin, helping sheep through the Australian drought.

A sheep exhibit. 1. Collect some articles, pieces of articles, or pictures of articles that sheep give us. Mount them on your bulletin board, or arrange them in your museum case. Here are some that you may not think of: the filling of bed comforts, linings of some coats, shoe brushes, or cleaning mitts.

2. Pull out a few fibers of wool and hold them to the light so that you can examine them. Compare these wool fibers with hairs from your own heads. Try to twist wool fibers and hair into thread. Put these threads in your exhibit, and explain why wool fibers make good cloth.



Fig. A. These cattle are in the interior of Queensland. They are drinking water from an artificial lake.

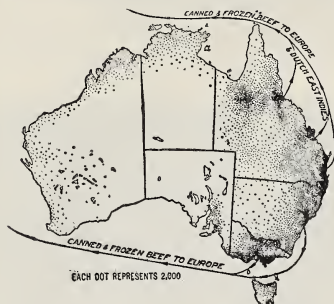


Fig. B. Cattle in Australia and Tasmania. Compare with the sheep map and the political map, and see if it shows how hot, moist climate separates these two kinds of animals. What does the rainfall map (Fig. 330-A) tell you about this?

THE CATTLE INDUSTRY AND THE TRADE IN MEAT AND HIDES

Cattle near the sea. You have just read that a great part of the Australian grassland is in sheep runs. Look carefully at two maps (Figs. 331-B and 338-B). Notice how the maps differ in two ways. First, the sheep map has few sheep near the sea; yet that is where most of the cattle are. Second, the sheep map has no sheep in the northern part of the continent, but cattle are scattered all the way across the northern (tropic grassland) part of the continent. There are reasons for these differences. The climate near the coast is damp and also warm. Damp, warm weather does not suit sheep. Too many get sick and die. This same degree

of dampness and heat does not hurt cattle; so we find the cattle industry in the damper parts of Australia. Let us visit a cattle station in northern Queensland. Find Queensland on the map of Australia (Fig. 327-A).

Tropical grasslands. The northern parts of Queensland, Northern Territory, and Western Australia, do not seem like pleasant places in which to live. The weather is hot throughout the year. The summer is damp and muggy, unless there is a drought. It is therefore not surprising to find that there are very few people indeed living in this part of Australia. Many more people could earn a living here if it were not for the terrible droughts. Sometimes the droughts kill thousands and thousands of cattle, just as they kill the sheep on the sheep runs.

This tropical grassland of Australia has a rainy season and a dry season, such as we found in the same latitudes in Africa and in South America. It also has the tall tropic grasses.

A cattle station. The house at the cattle station has a metal roof. The house is made of wood and it stands on tall poles. On the top of every pole is a wide sheet of tin. This is to keep the white ants from crawling up the poles and into the house. If the ants get in,



Fig. A. After cattle and sheep are dressed, they are frozen stiff as a board in large refrigerator rooms much like the one you see in this picture, loaded on refrigerator ships, and delivered still frozen halfway around the world.

they eat nearly everything — clothes, food, furniture, carpets, and books. The poles are of a kind of eucalyptus, which is so full of oil that the white ants will not eat them. This house on poles is the home of the manager and his family. Except for two or three stockmen who help them, the manager and his family may be the only white people within twenty or even fifty miles.

It is a lonely life for the white people. The manager may have eight or ten blackfellows, native Australians, as his helpers. One of them will help with the housework and do the cooking. The others will ride horses and crack long whips as well as the white men can. There are no fences. The cattle run where they please. They gather in big droves; they find their own food; they find their own water. The men ride around on horseback and visit the herds every day or two so that they may know where the droves of cattle are. The cattle of several owners may run together in one herd.

Many of the cattle runs here are as

large as a county in the United States; some are as large as four or five counties.

Fattening and slaughtering cattle. After the round-up, some of the cattle may be driven or taken by train to New South Wales or Victoria, to be fattened before going to the stockyards of Sydney or Melbourne. Some may be driven off to what they call the *boiling-down works*. There the cattle are slaughtered, then boiled and made into tallow and beef extract.

In years of good rainfall, thousands of fat cattle are slaughtered, frozen, and sent to foreign countries in the same way that the sheep are sent. Australian hides are also sent to many countries.

THINGS TO THINK ABOUT AND TO DO

Show differences. Write "cattle" and "sheep" at the heads of two columns. In each column write words or expressions that best describe the animals' homes. You may put the same expression in both columns where necessary.

Ten why's. Write ten "why" questions about the cattle industry in Australia. Who has the best set?

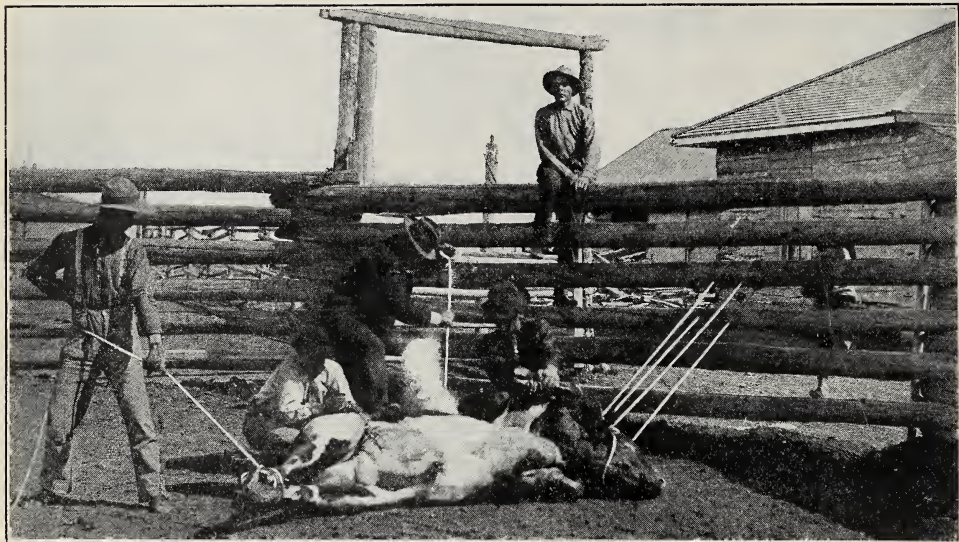


Fig. A. These men are branding cattle.

Courtesy Commissioner for Australia

SMALL FARMS AND THE DAIRY BUSINESS

Making butter. Even if you never saw butter made, you can easily make a little. Get a bottle of whole milk; let it stand until it is sour. You will then see the thick yellow cream on top. Pour the cream off into a cup. Heat it to a temperature of 60° and beat it with a spoon or fork. In a few moments you will find lumps of butter in the cream. The liquid that remains after the butter is taken out is called *buttermilk*.

General farming. The map (Fig. 338-B) shows that there are many cattle along the eastern coast of Australia. We must not think that this place also is a region of great cattle runs like the one we visited in northern Queensland. Find places on the eastern coast of North America having the latitude of Hobart, Melbourne, Sydney, Brisbane, and Townsville. The part of southeastern Australia near the coast is much like the Atlantic slope between New Jersey and South Carolina, and so are some of the farms.

There are thousands of farms with from one hundred to three hundred acres of land, fenced off into separate fields. A farmer will have a field of corn, a field of oats, a field of hay, and two or three pasture fields. In the summer time his cattle live out on the pastures, eating grass and picking up their living while the farmer is at work with his corn crop, his oats crop, and his hay crop. When winter comes, these crops are in the barn, and the cattle live on them all winter, as cattle do in the United States and Europe, although the Australian winter is not very long and not very cold.

The coast farmers of southern Queensland, of New South Wales, and of Victoria often carry on the cattle business as do the farmers in the Corn Belt of the United States. They buy young cattle that come by train from the runs in the interior because there is not enough grass in the interior to fatten them. The cattle are fattened on the grass, hay, and grain of the coast farms. They may provide the

beef supply for Sydney, for Brisbane, for Melbourne; or, frozen stiff, they may be packed into refrigerator ships and carried by the thousands to Europe. Each year thousands and thousands of wagons and trucks loaded with fresh beef, as well as with mutton, go through the streets of the European cities, carrying the meat from the Australian steamers to the European meat shops.

Perhaps you wonder why it is that the farm in the interior is so large, and the farm on the coast so small. It is because the coast has so much more rainfall (Fig. 330-A). Where there is more rain, there is more grass, and it does not take so many acres to keep enough animals or raise enough crops to provide for the farmer's family. Therefore, since the farms are smaller, we have many more people to a square mile (Fig. 57-A).

Dairy farms. Perhaps the coast farmer would rather keep cows and sell milk to the city markets, or take it to a creamery where the cream is separated from the milk by machinery, and made into butter, or to the cheese factory where the milk is made into cheese. Each year the dairy farmers of Australia make about forty-five pounds of butter for every man, woman, and child in Australia.

The Atherton Plateau — a climate island. Find the city of Cairns on the north coast of Queensland. What is its latitude? How far is it from the tropic of Capricorn? In what zone is it? This coast section is really not unlike Panama or the West Indies. Let us get on the train there in the morning. As we ride away from the coast, we see banana plants, coconut trees, sugar plantations, and tropic forest. All through the forenoon the train climbs up, up, up. As it winds in and out among the hills, we can see the coastal plain far below. At noon the forest



Fig. A. A champion dairy cow. In one year the milk from this cow yielded 1,349 pounds of butterfat from which 1,686 pounds of butter were made.

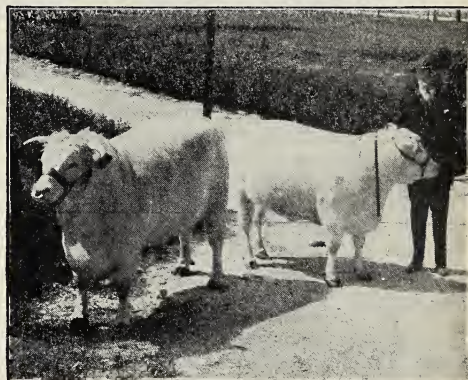


Fig. B. Pure-bred beef cattle.

beside the railroad does not look so tropical as that we saw in the morning. We are on the Atherton Plateau, 3,000 feet above the sea. Here the air is cooler, and the nights are always cool. We have come into a new world of plants. Here the apple, the peach, the cherry, and the pear are at home. So are peas, potatoes, corn, and barley. This place is in the tropics, but it is on a plateau where coolness makes it another zone, both for plants and for men. Hundreds of dairy farmers live here, and they ship tons of butter down to Cairns, a port of call for steamers bound for Dutch East Indies and Europe.

THINGS TO THINK ABOUT AND TO DO
Add to your network map (see page 325): the places mentioned in this chapter.



Courtesy Commissioner for Australia

Fig. A. Harvesting wheat in South Australia as it was done before the tractor came into general use. How many harvesting machines can you count in the picture?

Measuring butter. 1. Multiply 45 pounds by the population of Australia to find the pounds of butter produced.

2. Using the scale, 1 inch represents 10,000,000 pounds; draw a bar to represent the pounds of butter produced.

3. Color one third of it to show how much Great Britain buys.

Up we go from Cairns to the Atherton Plateau. 1. Draw a few large buildings to represent the city of Cairns; draw the railroad from Cairns to the Atherton Plateau. Show the tracks as they run along the flat coastal lowlands, as they climb the slope, and as they cross the plateau.

2. On each side of the tracks name or draw pictures of the crops you saw as you journeyed.

3. Tell why each crop is growing where you saw it.

Match me. For every one of the following statements about Australian cattle runs, make a corresponding statement about Australian coast farms. 1. Cattle runs are very large.

2. There are no fences.
3. Cattle find their own food all year.
4. Droughts are sometimes dangerous.
5. Cattle roam long distances to find enough food.
6. People live miles apart.
7. Calves are born on the cattle run.
8. Calves are sold into New South Wales.
9. No butter or cheese can be produced.
10. There are few or no railroads.

AUSTRALIAN WHEAT

An Australian wheat farm. Let us visit an Australian wheat farm in the state of New South Wales. This farm is west of the Great Dividing Range, but not so far west as was the sheep run. If you look at the rainfall map (Fig. 330-A), perhaps you can tell why. Like the wheat lands of Kansas and of Russia, the Australian wheat land is between the moister lands on one side and the drier lands on the other. The farm covers a square mile, or 640 acres, of gently rolling land. The soil is rich, black, and soft, like the wheat lands of Kansas or of South Russia.

The farmer has two hundred acres of his farm in wheat. Before he could plant the wheat, he had to "break" the land. That means he had to take away the bushes and plow it for the first time. Before tractors came, the farmer plowed with two or three horses and with a plow that turned one furrow about a foot in width. Because it took the farmer several hours to plow one acre, he could never plant two hundred acres in any one season. What difference would a tractor make? (Fig. 187-A.)

Dry farming. The wheat farm does not have as much rain as the farmer would like; but he has found a way to raise wheat by a system called *dry farming*. In the spring he plows a field; all summer it lies bare — *lying fallow*, it is called. There are no plants to take water out of the earth. In the autumn the wheat is sown with big, wide drills that plant a great many acres in a day. Now comes the season of most rain. This part of Australia receives most of its rain in the autumn, winter, and early spring. The winter is not very cold. The ground is seldom frozen. Snow is almost unknown. But if snow comes, it lies on the ground for only a few hours. The wheat grows green like thick grass. In the spring it throws up its straw with the head of wheat at the top, two or three feet above the ground. With the bright sun of early summer, the wheat turns a beautiful golden yellow. If the season is good, the grains are fat and plump and round. The dry weather is a help at harvest time.

When the wheat is ripe, it is cut by a large reaper drawn by many horses or by a tractor. The reaper, called a *combine*, goes around the field, cutting a strip many feet wide as it goes. This machine cuts the wheat, knocks the grains out of the heads, and drops them into a truck or puts them into sacks ready to be hauled to the railroad station in trucks or farm wagons.

There is so little summer rain here that farmers can sometimes let the wheat sacks lie out of doors or put them in big piles under a canvas cover.

Wheat and mutton sheep. The wheat farmer grows something besides wheat. He keeps some sheep. We must remember that he has about one third of his farm in wheat, one third in fallow, and one third in grass. So he keeps two or three hundred sheep. If the autumn is rainy, the

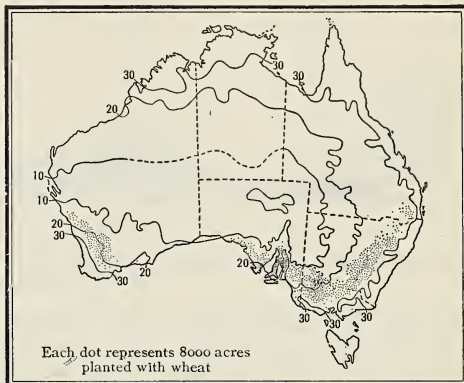


Fig. A. Where wheat is grown in Australia. The wavy lines show inches of rain.

wheat may grow very thick, and the sheep may be allowed to graze there for a few weeks without fear of hurting the wheat crop. Young wheat makes good sheep pasture, as wheat is really a kind of grass.

As winter is the season of most rain, it is the season of best pasture. Therefore the one third of the farm that is in pasture is where the sheep spend the winter. During the winter season of good grass, the lambs are born, and in four or five months they grow big enough to be sent to market. The wheat farmer's sheep are mutton sheep — big, round, and fat. In the autumn the farmer has two hundred mother sheep. In the spring he may sell two hundred lambs. Then, as the dry season comes and the pasture gets short, he again has the small flock of two hundred mother sheep. During the summer, after the wheat is cut, the sheep will go on the wheat stubble and eat the wheat straw if there is nothing else.

Climate and wheat. Look at the wheat map (Fig. 343-A). You see that a large part of Australia has no wheat at all. Wheat is particular. It has to have just what it wants or it will not grow. The tropic part of Australia is too hot for wheat; the eastern coast is too damp.

GULF OF
ST. VINCENT
ADELAIDE

MURRAY RIVER

600

Fig. A. You have seen your mother cut a pie in two. Imagine that she had a very big knife, cut Australia along like this drawing. It is called a *cross section*. It shows the height of land

If wheat has much damp, warm weather, a tiny brown plant, called *rust*, forms on it and spoils it. Western New South Wales is too dry, but there is a strip just west of the dividing range which suits wheat splendidly if there is not a season of drought. That is why we see a band of wheat just inside the dividing range.

Find on Figure 343-A the vicinity of Adelaide. See a little thick patch of wheat just north of Adelaide. A short distance east of that place, what do you see? Why is this great difference? Look at the physical map (Fig. 327-A) and find a mountain range east of Adelaide. In what direction does it run? See Figure 344-A for a little cross section right through this wheat belt north of Adelaide. What happens here is that a southwest wind, blowing off the great Australian Bight, blows against this mountain range and makes winter rain on its west side. Now look at the rainfall map (Fig. 330-A). What can you tell about mountains, rain, and wheat at this place?

The wheat map shows another area of wheat in Western Australia. It is there for very much the same reason that there is wheat near Adelaide. This corner of the continent has highlands that catch some winter rain from the southwest winds.

Wheat trade. The wheat map shows that only a very small part of Australia grows wheat. But we must remember

that Australia is a very large country, and that altogether the wheat fields cover in some years more land than all of Holland and Belgium. In good years the people of Australia grow three times as much wheat as they need for food and to use for seed. So, many shiploads of wheat or flour go from Adelaide, Melbourne, Sydney, and Perth to the Dutch East Indies, where the climate is entirely too hot for wheat; or to South Africa, which is too dry for extensive wheat growing, or to Japan or to Europe.

THINGS TO THINK ABOUT AND TO DO

Wheat words. Use each of the following words in a sentence about wheat in Australia: break, dry farming, lying fallow, drills, reaper, rust, too wet, too dry, too hot, just right, wheat climate.

Twice around the sun. Below is the jumbled story of wheat. In vertical columns write "spring," "summer," "winter" for two years. Opposite each season copy the proper expression to make the wheat story correct.

Reaper cuts strips around the field. Sheep eat dry stubble. Farmer plows the field. Rain and a little snow fall. Field lies fallow. Wheat turns yellow. Wheat grows like grass. Reaper knocks grain from heads. Farmer sows seed. Sheep eat young wheat. Reaper drops grain in sacks or trucks. Rain falls. Farmer hauls wheat to railroad. Heads form on stalks. Seeds swell. Wheat begins to grow.

Read the complete story to the class.

Wheat why's. See who can write the longest list of good "why" questions about wheat in Australia. Exchange lists and answer the questions.



a line from Sydney to Adelaide, and separated the two pieces. The cut edge of either piece would look something along the cut. Find on Figure 327-A each place named on the cross section.

GROWING FRUIT AND SUGAR CANE IN AUSTRALIA

Fruit, sunshine, heat, and moisture. We found in the last section that wheat is particular about the climate in which it will grow. We have already found in studying about our own country and the Mediterranean lands that fruit trees also are particular. They must have sunshine and heat to make the fruit sweet and to give it color. The trees need moisture at their roots so that they can drink; but too much moisture in the air and on the leaves is not good for them. Little brown rusts and other tiny plants, called *fungi*, grow on the leaves and make spots and holes in them. These fungi get on the fruit and make it rot. *Dry air* is much better for fruit.

There is one more thing about which fruit trees are particular. They cannot stand much frost at the time of spring blooming. If frost comes then, it kills the buds and there is no fruit that year. This means that a desert is a fine place for fruit trees if there is no frost and the roots of trees can get enough water.

Irrigated lands. Australia has a place like that, a place where streams run into a desert. It is almost like another Egypt. Look at the map of rainfall (Fig. 330-A) and then at Figure 327-A, and you will see that the Murray River system carries water down from the dividing range across

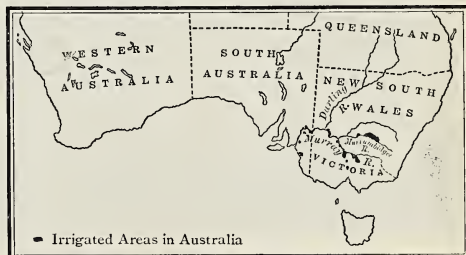


Fig. A. The small black areas on this map show districts which have been irrigated by use of the waters of the Murray and Darling rivers.

the very dry land of three states. Which states? The water of this one-river system makes a great fruit-growing region in this corner of the three states.

After the Australians found that it was too dry to make more sheep runs and cattle runs in the interior, and that the wheat belt was just so wide and no wider, they began to irrigate the land along the Murray River and some of its branches. The state government of New South Wales has planned to irrigate 200,000 acres along the Murrumbidgee River; dams and canals have been built to carry the water. The state of Victoria has spent \$50,000,000 in building irrigation works and has nearly half a million acres under irrigation. The government of South Australia has developed irrigation projects for many settlements along its parts of the Murray River.

From desert to orchard. A few years ago, this land along the Murray River and its branches was a poor sheep pasture

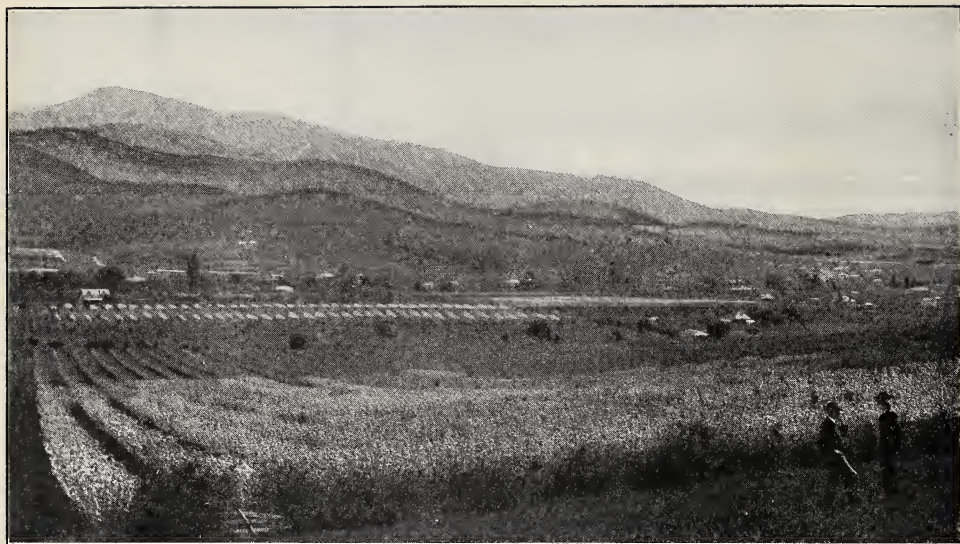


Fig. A. Pear orchards in bloom on the slope of a beautiful valley in well-watered Tasmania.

with a little grass and here and there a few bushes. Now there are fields, orchards, farms, cozy homes, villages, and thousands of trees producing apricots, peaches, plums, pears, figs, and oranges. Western Australia has also started a fruit industry by building dams to store water on some of the streams in the mountains of the southwestern corner of that state.

A fruit farm. Do you think that one man on an irrigated fruit farm has the thousands of acres that we found in a sheep run? Not at all. He can lease fifteen to twenty-five acres from the government, and that is all he can use. Much work is necessary to grow fruit on an acre of land. While waiting for the trees to grow large enough to bear fruit, the owner grows melons, potatoes, and other truck crops between the young trees. When the trees have become large enough to bear fruit, he must prune them in winter and cut off the branches that are too long or those that are in the wrong places. This is a great deal of work. When spring

comes, he must use a gas engine and a pump to spray poisonous liquids over the trees in order to kill the bugs and fungi. He must cultivate every tree several times during the summer.

A land with Mediterranean climate. The southwestern tip of Australia and the part near Adelaide and the lower Murray Valley (Fig. 327-A) have the same kind of climate as the Mediterranean lands (Fig. 52-A), California, and the western tip of South Africa (Fig. 281-A). Most of the crops grow on varieties of trees and plants that were originally brought from the Mediterranean countries. Therefore we find much the same varieties growing in the orchards of Australia that we find in the orchards of Sicily, Spain, Italy, Greece, Palestine, California, and Cape Colony.

Grapes. Grapevines cover more ground along the Murray River than any other three fruit crops. The farmers have learned how to raise grapes perfectly, and since 1910 the industry has greatly in-

creased. Before 1912, Australia bought raisins from the Mediterranean countries. That year she began to sell raisins, and now she exports many tons every year. When autumn comes, the grape growers along the Murray and the Murrumbidgee rivers pick wagonloads of grapes and spread them out on trays to dry; this causes the grapes to become delicious raisins.

The neighbors are equally busy picking and drying their prunes, figs, or pears. Earlier in the summer, other neighbors were drying apricots and peaches.

Australian and Tasmanian apples. Australia has three more fruit districts. One is the apple-orchard section. Apples do not like such hot weather as that along the Murray River. They like cooler places, such as the mountains of southern Victoria and the highlands of southeastern New South Wales; but best of all, they like Tasmania.

We have not talked much about Tasmania, an island south of Australia. What is its latitude? Find a place on the Atlantic coast of North America that is the same distance from the Equator. Tasmania is mountainous; it is cooler than Australia, has more rain, and has a good climate for apples.

The fruit farmers of Tasmania, southern Victoria, and the upland corner of New South Wales have thousands of acres of apple orchards. They pick enough apples to supply the Australian cities and, besides, they have thousands and thousands of boxes left to ship to the markets of Europe. In what months do you think the apples reach Europe? You must remember that the seasons are just opposite to ours. The Australian summer comes at the time of our winter, and their spring at the time of our autumn. Their fruit trees are blooming in September and October. The fruit

ripens in March, April, and May, and reaches the London market at the season when nothing is ripe in Europe or in the northern part of our country. You can find fruit from the Southern Hemisphere on sale in some of our larger cities during the months of March, April, and May.

Citrus fruits. Australia has an orange region on the narrow coast for many miles near Sydney. What part of the United States has the same latitude? The thousands of acres of orange and lemon trees on the plain near Sydney do not need to be irrigated. They have the fortunate habit of ripening their fruit at a different time of year from that of the irrigated orchards over on the Murray. The Murray River fruit is ripe in the Australian summer; the New South Wales seashore fruit ripens in the winter. In the same way, we get our autumn and winter oranges from Florida, and our spring and summer oranges from California.

Tropical fruits. The last fruit district of Australia is on the coast of Queensland, in the tropics. When the housekeeper goes to market at Sydney and buys a pineapple, she gets one that came on a ship from the pineapple fields in the hot lands of the Queensland coast.

This same tropic coast land has plantations of banana trees. Like pineapples, bananas must have very warm weather and no frost at all. Where do you think these Queensland bananas are eaten? It is not hard to guess. They are carried by ships around the coast of Australia and down to Tasmania.

The sugar industry. A small area of land along the Queensland coast between 16° and 19° degrees south latitude supplies Australia with sugar. The plantations, the cane fields, the factories — all the sugar work — are so much like those of Louisiana, Cuba, Java, about which

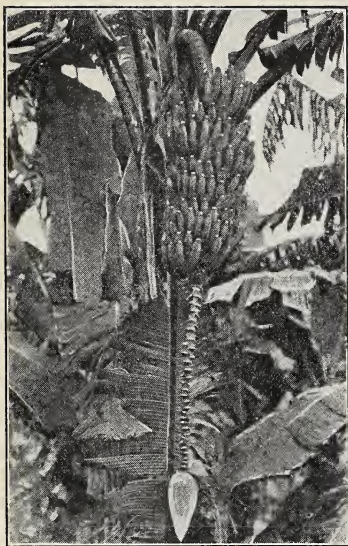


Fig. A. Tell where in Australia this picture might have been taken.

Fig. B. At the left is a bunch of bananas hanging "head down" as it does from the plant on which it grows. The bunch in the picture is ready to be picked.

you have already studied, that we shall not repeat it here.

THINGS TO THINK ABOUT AND TO DO

Set a fruit table. Copy and fill in the following chart so that anyone may see where certain fruits are grown in Australia. You may draw a map to accompany the table, showing: parallels, states, Murray River, irrigated spots, Dividing Range, southwest winds; write on the map 1, 2, 3, 4, to locate the fruit regions.

| | 1 | 2 | 3 | 4 |
|--------------|---|---|---|---|
| Location | | | | |
| Fruits grown | | | | |
| Temperature | | | | |
| Rainfall | | | | |

Fruit riddles. 1. Their roots are watered by irrigation; they grow where summers are hot and dry; they are spread to dry. What are they?

2. Write riddles for each of the other fruits grown in Australia. Let the class guess your riddles.

Suppose. Suppose you lived on the Murray or Murrumbidgee River in New South Wales or Victoria. Write a short paragraph, using this outline: 1. How your father obtained the land.

2. Why he chose the location.
3. The size of the property.
4. How the orchard was started.
5. How you cultivate the trees.
6. Your work at different seasons.
7. Why you enjoy living there.

A picture fruit map. 1. Draw tiny pictures of the following fruits: pineapples, bananas, peaches, pears, grapes, oranges, lemons, apricots, plums, figs, apples.

2. Paste them properly on a map of Australia for your bulletin board.

You would feel at home in Australia. If you came from any one of the following places, you would feel at home in Australia: Egypt; California; Sicily; Louisiana; Cuba or Puerto Rico; Virginia; Maryland or New York; Cape Colony; Florida; Java; Spain; Palestine; Greece; Italy. Write these names in a column, and opposite each write the name of a part of Australia that is like it in climate and fruit products.

I challenge you. I challenge you to draw from memory a free-hand map of Australia over a network of parallels and meridians; to fill in 6 states; 1 river system; 2 mountains; 1 peak; 5 cities; 1 bay; 1 near-by island.

Complete the sentences. Write ten parts of sentences for your classmates to complete about fruit and sugar in Australia. Here is a sample: Citrus fruits are chiefly _____ and _____.



Fig. A. A part of the harbor of Sydney, Australia. Tell from the picture why you think this is one of the world's best harbors.

Courtesy Official Secretary for Australia in the U. S. A.

MINERALS, PEOPLE, CITIES, AND THE FUTURE

Minerals. Australia has rich mines. It was the gold mines of Victoria that brought thousands of settlers to Australia about 1851, and now gold, silver, copper, lead, tin, and coal are important exports of Australia. Each day the provision trains from Adelaide go three hundred miles to a place called Broken Hill, in the dry country of western New South Wales. There, for many years, thousands of people have lived in a desert, digging silver and lead from a rich ore deposit.

Cities in the desert. It is an astonishing fact that minerals can cause a city to arise in the wildest solitude and live while the mines are profitable. Railroads make the miracle possible. Read what a Frenchman says of a gold-mining city of Western Australia: "... Take Kalgoorlie for example. On the bare moor rise mills arranged in the form of an amphitheater. ... Trains wind about, emptying entire forests into the furnaces. Everywhere the subsoil has been burrowed, and there are sometimes as many as twenty stories of underground galleries.

"Thousands of workmen labor in these

mills under the burning sun, blinded and sometimes almost asphyxiated by the smoke, the pulverized refuse of the ores, and the yellow sand of the desert. . . . It is a vast camp, a temporary refuge for a population which will scatter when the last veins are exhausted." Kalgoorlie, Coolgardie, and other mining towns (or camps) in this desert can live only by the water that is pumped two hundred miles through pipes, from the land of greater rainfall near Perth.

Gold and tin. The gold mines of Victoria are in a much more pleasant place, and in years they have been dug nearly a mile into the earth.

The Tasmanian tin mines are worked by great dredges, and I have seen expert Australian dredge men sending the sand and gravel of the Malay Peninsula through their great machines to get out the tin that was in it.

Coal. Australia is fortunate in having a good coal field only a few miles from the city and harbor of Sydney. Now that you know these three things, tell how they help Sydney, ships, Adelaide, Melbourne, Hobart, and places like Java that have no coal.



Fig. A. Parliament House, Canberra, Australia.

The people. The first white settlers who came to Australia were English. Today most of the people of Australia are English, and nearly all the rest are Scotch, Welsh, or Irish. The people, therefore, speak English. Indeed, the language of Australia is more wholly English than is that of the United States. Many of our newspapers are published in foreign languages because many of our people have come from foreign countries.

Cities. A large part of the people of Australia live in cities; but Australia does not have a great number of cities. Each state has one large city that has in it the greater part of the city people in that state. It is the capital of the state, and that brings many government officials. It is the chief port; this makes it the chief railroad center, the chief center of foreign trade, and the place for the wholesale stores. If a man builds a factory, he naturally wants to put it close to the wholesale stores of the great trading center, so this city becomes the chief center of manufacture in its state. Adelaide and Melbourne have more than half of all the people in their states, and Sydney has nearly half.

| AUSTRALIAN STATES | POPULATION, 1934 | CITIES | POPULATION, 1933 |
|--------------------------------|---------------------|--------------|---------------------|
| New South Wales..... | 2,621,000 | Sydney..... | 1,240,520 |
| Victoria..... | 1,829,000 | Melbourne... | 992,048 |
| Queensland..... | 957,000 | Brisbane... | 299,782 |
| South Australia... | 583,000 | Adelaide... | 313,261 |
| Western Australia... | 442,000 | Perth..... | 208,131 |
| Tasmania..... | 227,000 | Hobart.... | 60,408 |
| Northern Territory..... | 4,000 | | |
| Federal Capital Territory..... | 9,000 | | |
| Total, Australia... | 6,677,000 | | |

Sydney. What is the population of the largest city in Australia? How many people are there in the United States? in Australia? How many cities in the United States are larger than Sydney? Sydney has a well-protected harbor (Fig. 349-A), and for that reason it became the capital of the new province. Since it was the capital, nearly all the railroads in the province were built from it out into the country, thus making it a great railroad center. These railroads brought in much freight for shipment; therefore many wharves and warehouses were built. Any week we may see ships there from the United States and from many other countries. At the wharves and warehouses of Sydney, ships load wheat, wool, frozen

meat, and butter, and carry most of their cargo almost halfway around the world. Cargoes of coal go to the East Indies and sometimes to Chile.

The main street of Sydney is crooked. This happened because the first settlers used to drive down to the wharf in ox carts, and they wound around where it was easiest to make a road through the woods. This became the cart road. People built their houses beside the road; today it is the great main street. The main streets of many of our large cities were started as country roads, and as a result, many of them are crooked. The newer streets of Sydney are wide, pleasant streets.

Sydney has many fine buildings and beautiful parks. It has many factories, railroad repair shops to keep the cars and engines in order, and wholesale stores which send goods to the country stores up and down the coast and far into the interior. The suburbs have shady streets, and there are beautiful bathing beaches along the shores of the ocean, which are easily reached by trolley car, railroad, and automobile. Back in the mountains, which may be reached in a few hours by train, there are hotels and summer resorts much like the summer resorts in some of the mountain regions of the United States.

Some of the people of Sydney enjoy the winter sports of coasting, skiing, and ice skating, as do the people in the northern sections of the United States. The people of Sydney go to Mount Kosciusko, southern New South Wales, 7,318 feet high, the highest mountain in Australia, for winter sports.

In winter this mountain has much snow, and all kinds of winter sports are enjoyed; but in summer all the snow melts.

Other large cities and railroads. The other large cities shown on the table are

much like Sydney in many ways, and are as important in their states as Sydney is in New South Wales. Railroads were built many years ago to connect Brisbane, Sydney, Victoria, and Adelaide; but there was Western Australia, far away across the desert. The Commonwealth of Australia wanted all its state capitals to be connected by railroad; so the government built a railroad across the desert. It crosses miles and miles of plains of sand and gravel, with never a farm, a field, or a flock of sheep to be seen, or any houses except those of the people who are working to keep the railroad in order. The railroad is really not of much use. It might be called a piece of political foolishness. The passenger train runs only three times a week. Goods can be taken more cheaply from port to port by ship.

Canberra, the capital. When our government in the United States started, the people wanted to have a new city for a capital, so they chose a place on the banks of the Potomac River and there built the city of Washington. They built it for no other purpose than to be the capital of the United States. They planned it on paper before they began to build. Washington was laid out with the best plan of any city in America.

Australia has a government in many ways like that of the United States. The Australians did as we did in planning a capital city. They chose a place in the country and said, "Here we shall have our capital." They then made plans on paper and began to build their city which they called *Canberra*.

You can find Canberra on the map. The Congress, or Parliament, met there for the first time in 1927. Because the people planned well before building was started, Canberra is a good city in which to live, but the Australians find it expen-



Courtesy the Philadelphia Commercial Museum

Fig. A. The camel is still the beast of burden in many of the drier parts of Australia. The picture shows a group of miners about to set out from a store and post office in West Australia.

sive to build a city away off in the woods, with no industry but government. When Parliament meets, they need many hotels. When Parliament is not in session, a big hotel with hundreds of rooms and scores on the staff may not have even a single guest.

Future. The people of Australia have tried very hard to get more people to live in their continent. A million came as *assisted immigrants*, which means that the government did something to help them to come to Australia. Sometimes it paid their way from England, Scotland, Ireland, or Wales; sometimes it also gave them land for a farm.

THINGS TO THINK ABOUT AND TO DO

Suppose. Suppose you were invited to visit Sydney. Tell or write how you might enjoy yourself: 1. If you need a rest.

2. If you enjoy winter sports.

3. If you are interested in ships and trade.

4. If you are interested in seeing how people make a living.

"Political foolishness." Tell why this might describe Australia's longest railroad.

1. Draw it on your map, showing how it connects the state capitals.

2. Why does it carry little freight? few passengers?

3. What is the better means of transportation between capitals?

A new city; disappearing cities. 1. How new is Canberra? Why was it built? How is it like our Washington? Why was it expensive to build?

2. Why are there few cities in western Australia? What minerals do they mine? Are they permanent cities? Are there any abandoned mining cities in our country?

CHAPTER SUMMARY

"The world's lost corner" was the expression used to describe Australia (page 325). Debate this question: "Can Australia become as important as North America? as Great Britain?" Before you debate, make a list of the points on each side of each question.

A picture map of Australia. On a map of Australia paste pictures to suggest the products of Australia which we have studied.

"Lost in Australia" was the name of a game played on page 334. Play it again using descriptions of: mining towns, wheat fields, apple orchards, city wharves, cattle ranches.

Your Australian dictionary. Your dictionary (page 330) should contain many new words and expressions. Exchange dictionaries with your neighbors and see whose is most complete.

NEW ZEALAND AND THE PACIFIC ISLES

NEW ZEALAND

☞ As you read, note the reasons you will give for your answer to this question: Would you advise a New Zealander to move to some other country?

Antipodes. Find a place in the Southern Hemisphere that has 180° longitude and the same latitude as southern England. This place the British call Antipodes ("opposite to the feet of" England). Perhaps this tells why the Europeans were so slow in going to this place.

The Maori. Less than a hundred years ago, when the English claimed New Zealand as a colony, there were twenty tribes of native people called *Maoris*—big, strong, brown people, much more highly civilized than the Australians. In the early days they fought the British. Then they settled down to learn the white man's ways. They have done this remarkably well, and four of them now sit in the New Zealand parliament.

The white population. When we say "British," we refer to the English, the Irish, the Scotch, and the Welsh—the people of the British Isles—but the New Zealanders say that they are the *real* British, the *most* British people in the world, because they are a *mixture* of English, Irish, Scotch, and Welsh. The New Zealanders are a very progressive people. Schools are free. Every child, between the ages of seven and fourteen, must go to school. They have several colleges. Their government has done many new things that had not been done before by any other government in the world.

For a long time New Zealand was a British colony, with a governor. About the time that Australia and South Africa each became united, the New Zealanders



Fig. A. A Maori chief in the costume of his tribe. From his belt hangs a *mere*, a short, flat club of wood, stone, or bone. The Maoris live in New Zealand.

changed the name of their country to a *dominion*, and their governor to a *governor-general*. Now they are one of the self-governing dominions (page 100) of the British Empire. Their form of government is much like that of the United States or Canada.

Climate. We might say that the climate has helped the New Zealanders to become a progressive people. Find places on the west coast of Europe that have the latitude of the north end of the North Island of New Zealand, and of South Cape, at the south end of Stewart Island.

New Zealand, like Europe, faces a western ocean and receives the west wind. New Zealand is mountainous, and the west wind blowing against the mountains makes rain, much heavy rain. Parts of New Zealand have thick forests, ferns, or tall grass, all dripping with moisture. New

Zealand scarcely knows what drought is.

Good land, beautiful country. Unlike Australia, New Zealand has neither droughts nor deserts. Two thirds of the country is mountain and forest, and about one third is good for pasture and farmland, mostly pasture because much of it is hilly. The mountainous parts are very beautiful, and the New Zealand Alps, which take up so much of the southern island, are as much as 12,000 feet in height. They are snow covered, with many glaciers. A journey along the coast in a steamship rivals Norway for beauty.

The Canterbury Plain. On the east side of South Island, both north and south of the city of Christchurch, is a plain, the Canterbury Plain, much like the plain of eastern England (page 104). Mountains stand between it and the sea, whence comes the prevailing wind, and keep it from having so much rain that the farmer cannot use his plow. There is just enough rain to make the land good for wheat and other crops. The New Zealand wheat yield is 30 bushels an acre—twice that of Australia or the United States. Barley, oats, potatoes, and other European crops do splendidly. The New Zealanders aim only to supply themselves with these products; often they import wheat from Australia. Only about one thirtieth of New Zealand is cultivated.

Meat, butter, cheese, and wool. To get a correct idea about business in New Zealand, you must think of it as a country where many of the forests have been cut away and burned away to make room for sheep ranches and dairy farms, especially for big sheep ranches. There are 7000 farms with over 1000 acres each; there are 522 farms with over 10,000 acres each. In fact, three fourths of New Zealand farm and pasture land is divided into farms more than one square mile in size.

New Zealand has little snow in winter, and sheep and cattle can live on the pastures most of the year. When the New Zealand farmer wishes to fatten his lambs, he plants a field of turnips, which thrive nicely. Then he turns in the sheep to eat the turnips from the ground, without any labor on the part of the farmer. English grasses do well, and so, with its moisture and even temperature, New Zealand is one of the very finest pasture lands in the world. Because the good grass will fatten sheep and fatten cattle, and feed cows so that they can give plenty of milk, the New Zealanders have four great export staples that come from grass—meat, wool, butter, and cheese. Little New Zealand exports more *meat* and more *butter* than does Australia, and far more cheese.

Because so much of New Zealand is good land, the farmers can go on, year after year, building up their farms and their flocks.


Cities. New Zealand has several cities along the coast, where there are slaughterhouses, freezing plants, creameries, cheese factories, the houses of wholesale importers and exporters. New Zealand does not do much manufacturing, for she has five farmer workers to three factory workers. She does not have so much of her population in cities as does Australia, and she has several cities instead of one big one. Find American cities having the same population as Auckland, Wellington, and Christchurch.

Future. New Zealand could easily support several million people, but the New Zealanders are not anxious for immigrants, and their population is increasing but slowly. They want New Zealand to stay as it is, an advance outpost of European civilization on this beautiful land, far away in the cool, healthful South Seas.



Fig. A. One of the many scattered islands of the black men. The men are natives of the Solomon Islands (Fig. 324-A [G-6]). Their canoe is a war canoe. Behind them are the waving palm trees which line so many tropical shores and drop their coconuts where the waves and currents may carry them to some other land.

THE ISLES OF THE PACIFIC

 Imagine that you live somewhere on an island in the Pacific. As you read, gather facts for stories about *my food, my house, my sports, my neighbors* (include here visitors who arrive by boats).

The water hemisphere. Hold a globe so that you look at 150° west longitude and 20° south latitude. How much land do you see? The Pacific Ocean is as large as all the continents and all the islands, and it has enough water to swallow up another United States, Australia, England, France, Germany, and a dozen other European countries.

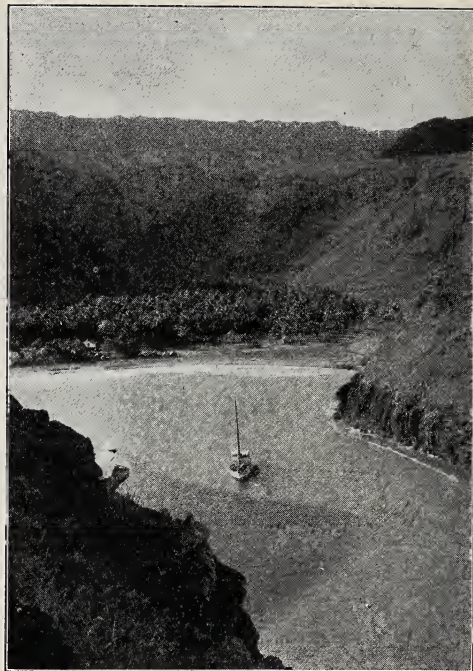
In this world of water, you might sail for days and weeks and never see a sign of land. It has only a few thousand square miles of land scattered about in the form of many small islands. Most of the islands are only little reefs of coral rock covered with sand and shaded by groves of coconut

trees. Many have no people on them, but long ago the ocean currents carried coconuts to the shore. The waves threw the nuts upon the beach, where they sprouted, pushed their roots into the sand, and sent their beautiful feathery tops into the air (Fig. 356-A), and started their wonderful business of food making. Thus have sand islands been made ready as a home for man.

The scattered lands of the brown men. These islands, called *Polynesia*, are, or were, the home of the brown men (page 353) named *Polynesians*. These friendly, polite, and pleasant people welcome the stranger and treat him kindly. They love music, dancing, and sports. Often they decorate their bodies with garlands of flowers and amazing designs in tattoo. Among the Polynesians, men are often honored for their beautiful work. Those who excel as tattooers, carvers, and builders of canoes are honored, as American



Fig. A. The native in the picture is holding a coconut with the husk on. After you have looked closely at the picture, decide whether he must work hard to get this good *money* crop.



By Gifford Pinchot from *TO THE SOUTH SEAS*
Fig. B. This native village is in the Marquesas. (Fig. 324-A [P-6]). The "white man's" ship at anchor has just called at the village for copra.

schoolboys honor a great athlete. The men are expert boatmen, and everyone swims in the warm waters of the Pacific.

A land where Nature gives harvests. This ocean world is a land of delight for the brown man. The tropic heat and moisture, which are so trying for people of the white race, seem to interfere but little with his welfare. Most of the people live near the seashore, where there is a sea breeze. Living is easy, because Nature has covered these islands with crops, most of which are tree crops. An American, traveling in the Marquesas Islands, says: "In a couple of miles from the water's edge to the jungle tangle of the high hills were thousands upon thousands of coconut palms, breadfruit, mango, banana, and lime trees,

"There is scarcely a need of the islanders not supplied by the coconut trees. Their wood makes the best spears and furnishes rafters and pillars for native houses, the knee and headrests of their beds, rollers for the big canoes or whaleboats, fences against the wild pig, and fuel. The leaves make baskets and covering, screens and roofs to dwellings. . . . On the stiff stalks of the coconut leaves oily candlenuts are strung to give light for feasts. . . . The network that holds the leaves of the young trees . . . has every appearance of coarse cotton cloth, and is used to wrap food or is made into bags, and even rough garments, for fishermen especially."

The coconuts are a nutritious food, used in many forms. To get light, the Polynesian has only to go to some thicket of

candlenut trees and pick up bushels of the oily nuts which burn as a candle burns.

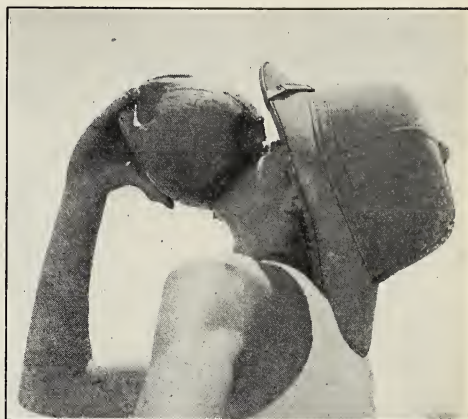
Breadfruit and taro. The coconut is only one of many, many food trees of this bounteous region. Before white men began to trade with these people, the main food of the native was breadfruit. Breadfruit grows on a tree and looks like an enormous rough-skinned orange. Not only do the Polynesians eat this fruit daily, but they make of it a starchy food called *poi*. This they store in pits dug in the earth, where it keeps for many months, to guard against famine.

"As bread is to us, so was poi to my tawny friends. They ate it every day, sometimes three or four times a day. As the peasant of certain districts of Europe depends on black bread and cheese, the poor Irish on potatoes . . . the Scotch on oatmeal, so the Marquesan (and other Polynesians) satisfies himself with poi, and likes it really better than anything else."

Poi is also made from the starchy, potato-like roots of the taro, or caladium (also called *elephant's-ear*), a plant often grown as an ornament in the United States.

The trading ship. The white man's trading ships have changed the life of the people on the larger islands. Small trading vessels, which resemble floating stores, sail around Polynesia. The trading room of such a vessel is packed from floor to ceiling with a great variety of goods, such as pins and anchors, harpoons and pens, crackers and jewelry, cloth, shoes, medicines, tobacco, soap, socks, and writing paper. These goods are traded for copra, the dried meat of the coconuts.

Thus the coconut becomes the great basis of trade with the white man and all the world. The copra is carried to Sydney, Australia; to Wellington and Auckland, New Zealand; and to Samoa and Honolulu. At these ports it is crushed for oil



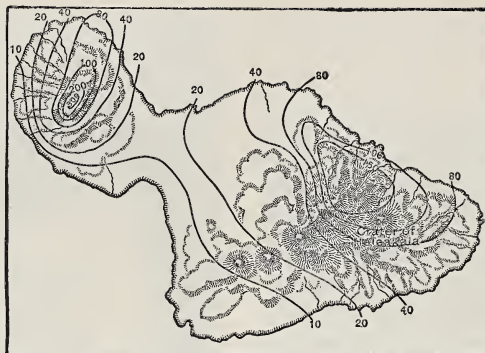
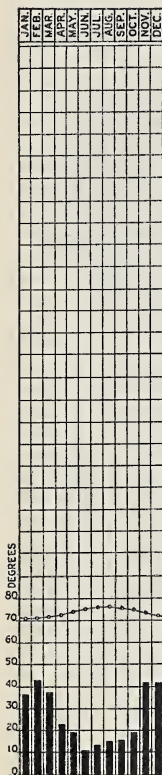
By Gifford Pinchot from *TO THE SOUTH SEAS*

Fig. A. Coconut milk right out in the hot tropical sun is always cool to drink. See the helmet which the white man in the tropic wears to shield head and neck from the almost direct rays of the sun.

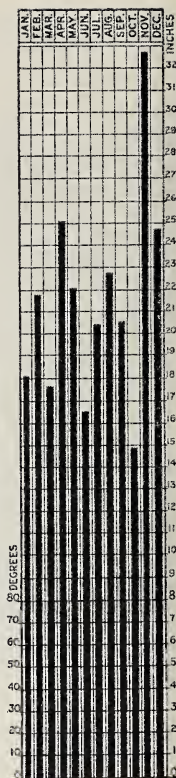
or shipped on steamers to Europe and America. We use the oil from it for cooking fat, or for soap fat. We can get enormous quantities of copra if we should need it, for the coconut tree grows on nearly all damp shores between the tropics of Cancer and Capricorn.

Hawaiian Islands. The Hawaiian Islands, the largest group of the brown men's tropic isles, are larger than Rhode Island and Connecticut. Like Tahiti and Marquesas, this group was built up from the bottom of the deep sea by the outpourings of lava from several volcanoes, which have finally raised their heads far above the surface of the water. The decayed lava makes very rich soil, and the trade wind brings much rain (Fig. 358-B); so parts of the islands are a splendid place for tropical farming.

More than a hundred years ago, American missionaries went to Hawaii to teach the natives our way of living. Finally the people asked their queen to resign, and voted that the island should be joined with the United States. It is now an American territory, with a government



Figs. A, B, and C. Above is a map of Maui, a mountainous Hawaiian island in the path of the northeast trade wind. Notice that the rainfall on the windward side (side toward the wind) is heavier than on the leeward side (side opposite the wind). Notice that as the wind strikes the mountains, the rainfall increases to 150 inches on the larger mountain. The chart at the right shows the average monthly rainfall at a place on the windward side; the chart on the left the average monthly temperature and rainfall of a place on the leeward side. How much rain falls each month at each place?



much like that of our own state governments. Hawaii sends a delegate to our Congress at Washington.

Sugar and population. Many Hawaiian sugar plantations are owned by

American capitalists. Many of the native Hawaiians have died, and immigrants have come to work in the cane fields which stretch like a sea of green across the rich slopes. The white man does not like to work under the tropic sun; so high wages have been paid to other workers who have been brought to these shores.

ESTIMATED POPULATION OF HAWAII (1934)

| | |
|---|---------|
| Hawaiians | 23,740 |
| Part Hawaiians | 29,171 |
| White (of whom 7,215 are Puerto Ricans) | 81,762 |
| Chinese | 28,782 |
| Japanese | 141,673 |
| Koreans | 6,789 |
| Filipinos | 65,113 |
| Negroes | 663 |
| Other races | 307 |

Total..... 378,000

The sugar plantations of Hawaii are among the finest in the world. They are

managed by the Americans and worked by the various immigrants. Most of the sugar comes to the United States.

Other crops. Millions of cans of Hawaiian pineapples come to

American grocery stores, bananas from Hawaii come to our Pacific Coast, and the Chinese and Japanese grow some rice in the Asiatic way for their own use.

Trade. Look at the map (Fig. 324-A) and see if you can tell why Honolulu, the beautiful capital of Hawaii, is called the *crossroads of the Pacific*. It is a modern city, with steamships, trolleys, schools, telephones, and most things that one finds in the cities of the United States. Hawaiian trade has increased greatly since Hawaii became part of the United States; most of her trade is with us. We take nearly all of the Hawaiian sugar, pineapples, and bananas. Ships going to Hawaii carry the manufactures that are wanted in Honolulu and in other Hawaiian places.



Fig. A. Two natives, some animals, and birds of the Pacific Isles. (1) The native woman and child wear nose rings as ornaments of beauty. (2) The white boy tried to play seal but the seal found him out. (3) A man-of-war bird with eggs. (4) The white man has the lap dragon by the tail. (5) The big turtle becomes personal.

Samoa Islands. A part of the Samoan Islands belongs to the United States, and a part belongs to Great Britain. Copra is the chief export. If the Samoans want a little extra money, they can go out, pick up some coconuts, cut them open, dry the meats, and have copra to sell. The people even pay taxes in copra. The trees grow so well on these islands that the Samoans have more coconuts than are needed to meet their own simple wants. They do not want many things. They live in grass houses and use a piece of cotton cloth called a *lava lava*, forty-four by seventy-two inches in size, to wrap about themselves for clothing.

Fiji. Another group of islands, the Fiji Islands, six hundred miles to the southwestward from Samoa, belongs to Great

Britain. The native Polynesians do not want to work on the Englishmen's plantations, so many thousands of people have been brought from India to work in the cane fields. Sugar is the chief export of this group of islands.

The islands of the black men. Between Fiji and Papua are the New Hebrides, the Solomons, and the Bismarck islands. The people here have dark skins, much like the natives of Australia and Papua (Fig. 265-B). They are not nearly so pleasant as the Polynesians, for it has long been the habit of some of these peoples to eat other people. But now since the Europeans govern these islands, the natives usually sell coconuts instead of eating their neighbors. Missionaries have been surprised to find how quickly canni-

By Gifford Pinchot from *TO THE SOUTH SEAS*



Photo J. Russell Smith

Fig. A. A branch of the keawe tree showing the beans. The tree bears two crops a year.

bals change their habits when they are taught better ways of doing things.

Dominions have colonies. The government of this part of the island world is rather curious. Australia and New Zealand have governors-general from London, but they have become quite grown-up nations and have colonies of their own. Since 1901, Australia has had a territory, about 90,000 square miles of tropic forest land, in southeastern Papua, or New Guinea (page 267). After the World War, Australia got control of more land in Papua, which Germany had once owned.

Australia now rules it by authority of a mandate from the League of Nations (page 83). Australia, therefore, is a kind of real-estate and government agent for the League. This mandated territory is northeastern New Guinea and the islands that lie between it and the Equator.

New Zealand has a mandate over German Samoa.

The French island of New Caledonia has one of the world's richest deposits of nickel, and ore or metal are sent to Europe.

Other United States possessions. The possessions of the United States in the "South Seas," besides Hawaii, are

American Samoa, Guam, and the Midway Islands.

Tree crops and the future. The area of the Pacific Islands is not great, but, if fully used, large quantities of sugar, as well as coconut and other tree crops, could be produced. Hawaii has a suggestive new tree-crop industry in the mesquite or keawe tree. Its nutritious beans are picked up from the rough ground on which the tree grows, and are sold for as much as corn. The beans are made into meal and used as food for live stock. This tree grows on land too rough for the plow and too dry for any cultivated crop, but it yields more good cow feed than an acre of corn yields in our own Corn Belt. This crop and other crops that grow on trees can be grown on much land that is too hilly and rough to be used for plow crops. This is true in Polynesia and in nearly every other country, if man should set out to use his resources without wasting them.

CHAPTER SUMMARY

"The boot that Italy kicked off and broke." This might describe the shape of New Zealand. 1. Draw North Island and South Island on a network of parallels and meridians one inch apart. Number the parallels and meridians. Color your map to show mountains and plains. Draw arrows to show the direction from which the wind blows most of the time.

2. Locate, using symbols: New Zealand Alps, Canterbury Plains, Stewart Island, South Cape, Christchurch, Auckland, Wellington. Keep a symbol key.

3. Below your map, answer the following: Why is New Zealand called England's *antipodes*? Why is the temperature of New Zealand mild? Why is her rainfall heavy?

Problems for good thinkers. Let each pupil solve one of the following: 1. Why are the Hawaiian Islands called "The Crossroads of the Pacific"? 2. Why do New Zealanders export wool and meat, but not grains and potatoes? 3. What crops of western Europe should also grow well in New Zealand? Why?



Fig. A. The winding river, the tropical jungle, and small clearings with houses and gardens are to be seen as we come to the first foothills of the Andes.

SOUTH AMERICA

GENERAL VIEW

We shall cross South America in three places, each very different from the others. Let us see how South America looks from an airplane as we fly across it. As you read, find everything on the map.

Crossing near the Equator. We start from the city of Para on the eastern coast near the Equator, and set out for the Andes Mountains. Near Para we look down on fields of corn, cassava, and bananas, but most of the day we see only the dark green tops of the hot, moist forest land, or the dark, shining water of a great river. There is forest to left of us, forest to right of us, forest as far as we can see, forest everywhere, so it seems.

Here and there on the banks of the river,

often miles away from one another, we see small clearings in which are grass-roofed houses, with corn, bananas, and a few fruit trees around them. The houses are always on the river bank, so that the people can travel in boats. Below us is an ocean steamer with black smoke rolling out of her smokestack. This steamer is going east, but another is going west, up the great river to Manaos. The steamer carries a little of almost everything that the storekeepers of this city in the forest sell.

After ten hours of flying above the forest and the river, we look down on Manaos. Our plane glides down like a great bird and settles on the dark, quiet



Fig. A. As our plane approaches the Andes Mountains the land becomes hilly, then mountainous. Dense forests cover the slopes and the tops of hundreds of mountain spurs and ridges.

water. It settles on the water because it is a flying boat, or *hydro-airplane*. No airplane can land in a forest. An airplane that lands on wheels does not belong in the Amazon country.

A city in the hot forest. At Manaos we hear much talk of rubber, for that is the chief thing the people have to sell. The weather is melting hot with damp, sticky heat. It makes us feel heavy. Our clothes stick to us, and we wish we were up in the airplane where it is cool. Many people of the city ride on the trolleys in the evening to keep cool. We are so glad to find electric fans in the hotel rooms.

The next day, for hundreds of miles, all the way to Iquitos, we see only forest and river, and the huts and clearings of people who live by *patch-and-thatch* farming. The city of Iquitos is in Peru, in the western part of South America, but here is

the mighty Amazon, greatest of rivers, flowing silent and deep. Here at Iquitos we are still in the great dark forest.

Crossing the high mountain. We leave Iquitos in the Peruvian government's hydro-airplane. It is the regular mail plane. We fly up a branch of the Amazon, looking down always on shining river and dark forest. We leave the plane sitting in the water at the little town of San Ramon, and fly away westward in an airplane with wheels. Up we go, up, and still up. Our plane is climbing to get over the Andes. The weather is very cold now. There is no forest beneath us. It is too cold for trees near the summits. There is nothing but the bare ground and bare rock, the snow-covered peaks of the high mountains, and the high, cold plateau that lies between them. On the plateau we see shepherds in warm clothes tending flocks



Fig. A. An airplane view of a part of the Andes of Peru and the plain that lies between them and the Pacific Ocean. See Mount Misti in the distance—an old volcano, with snow-capped, rugged sides—and the farms about the town of Arequipa at its base, irrigated by water from the mountain snows. Point to dry land; irrigated land.

of sheep, and the villages of stone houses in which the shepherds live.

We cross the western range and start down. How different is the western slope from the eastern! The gray mountain sides are treeless from top to bottom. They are as bare as a stone wall. It is often two or three years between showers here. The stream that we see foaming over the rocks below us is melted snow from the high Andes.

We fly over the city of Lima, spread out like a map below us. Beyond Lima we see the ocean and a city by the sea, with ships in its harbor. We look down on land that is as bare and dry and white as any sand bank. The plain along the Pacific here is desert. In it are green fields, irrigated with the water that runs down from the melting snow banks on the Andes.

Crossing the land of wheat, corn, and cattle. Let us fly westward across South America again. This time we are in an airplane with wheels. We start late in January from Buenos Aires.

As we soar over the city, we can see the harbor with dozens of big ocean steamers from Europe and the United States. Large warehouses stand beside the water. The fine buildings and wide streets of the city stretch almost as far as we can see, for this city is larger than any American city west of the Mississippi River; its climate is somewhat like that of eastern North Carolina.

Soon we are looking down on railroad trains moving toward Buenos Aires, and on farmhouses with shade trees around them. There are green pasture fields where herds of cattle and flocks of sheep graze, and fields with dark, plowed soil





Study the key of this map and also that of Eurasia (pages 6-7) and that of Africa (pages 280-281). What kinds of land are found in Africa and in South America? Make a sketch map of Africa and one of South America, and mark on each the area that has the same kind of land. Which has the larger area of good land? Which kind of land in South America would you choose for your new home if you were migrating?

Fig. A. South America as the home of man.

where the cultivators go back and forth between long rows of young corn, as they do in the Corn Belt of the United States.

An hour later we look down on yellow fields of wheat, where machines from Chicago are harvesting the crop, and trucks from Detroit are hauling the grain to the grain elevator near the railroad station.

Desert and icy mountains. In two hours we cross some low mountains, and then for miles and miles we see only a few sheep and cattle ranches in a very dry country, much like Nevada.

The shining white speck we see in the sky to the westward is a snow-capped peak of the Andes. The base of the mountain is hidden in the haze. Below us are the orchards and vineyards of Mendoza. They are green and fine because of water from the Andes.

Up we go. Once more we are over the high, cold, icy Andes. There is no plateau here; only steep, rocky, sharp, rough mountains. We glide down over a belt of pine forest, then of pastures, then of orchards and vineyards. It looks very much like southern California near Los Angeles. It has the same kind of climate and crops.

The city of Santiago lies below us in a green valley. In another half hour we have crossed the coast ranges and land on the shore of the Pacific. We have seen many kinds of land in one day of swift flight, with only two landings for gasoline.

From bright sunshine to foggy gloom. For our third crossing of South America we go all the way by steamer. We start at the east end of the Strait of Magellan. The shores here are low, treeless grasslands. The sun is shining brightly. This land has little rain because the Andes Mountains keep the wet west winds away from it. With our glasses we see on the shore a shepherd with two dogs and a large flock of sheep.

At the other end of this 300-mile strait the ship winds in and out between the steep, rocky mountain sides that wall in the strait. We are in the far southern Andes, where the west wind blows in fiercely from the cold southern ocean. We do not see the sun as we try to see through the clouds. The air is damp, and cold, and raw. It is summer, but we need an overcoat as we stand on the deck of the ship. There are short showers of cold rain every few minutes. The tops of the mountains near by are covered with snow. Their bottoms are covered with thickets of beech and evergreen trees, whose low, dripping-wet branches lock together so tightly that a man cannot walk through them. You might hunt for a month along this coast with its many steep, rocky islands and never find a human being.

A triangle map. Lay three rulers along the seacoast of South America. Copy this triangle which your rulers make; only make your drawing larger. Inside your triangle, draw a free-hand map of South America. Draw the Equator, the Tropic of Capricorn, parallels 50° S. and 10° N. Draw the Amazon River; the Andes Mountains. Place on your map the cities studied in this chapter.

A map of the Amazon journey in sand or clay. Form a level plain in sand or clay. Draw the Equator with a pencil point. Next, choose a scale (the same as map in Figure 369-A if you are making a clay map; several times as large if you are working in sand). Next, place the important cities. Pile up the Andes Mountains west of Iquitos. Show the main stream of the Amazon.

Make a sand or clay map of our second journey; of our third journey. Be sure to show everything mentioned in the text.

Twin continents. Fill in the following blanks to show how much alike the two Americas are:

- a. The climate of Buenos Aires is like —.
- b. The climate of Santiago is like —.
- c. The climate east of Mendoza is like —.

d. There is no climate in North America like that of —.



Fig. A. Steamboats such as the one on which we traveled up the Magdalena River. The boats have paddle wheels at their sterns, and flat bottoms. Why is this? Is this the lower or upper Magdalena?

THE NORTHERN COUNTRIES OF SOUTH AMERICA

GOING UP THE MAGDALENA RIVER

A port on a trade-wind shore. As our airplane nears the coast of South America, we spy a port below us with its mile-long pier reaching out into the sea. Beside the pier are two steamships loading sacks of coffee. One ship is bound for New York, but it will be a week on the way. The other is taking coffee to Europe, and will be two weeks on the ocean. Only yesterday morning in our airplane we rose up from Miami, Florida, sailed over Cuba, and slept at Kingston, Jamaica. Today we crossed a sea. You can find it on the map (Fig. 369-A). Our plane does not land at the port, which is only a small town, but continues to a city which we see not far away on the bank of a large river. The city is Barranquilla.

Along the coast there is a breeze blowing in from the sea, for this is a trade-wind shore. But if we should land and walk about, we should get hot and very soon we should want to sit down. The weather seems to make one's very bones feel tired. It is hot here every week in the year.

The Magdalena and its boats. Perhaps you wondered, as we flew over the coast, why the ocean steamers stopped at the little port of Puerto Colombia, instead of coming up the Magdalena River to Barranquilla. If the ships could do this, it would save a great deal of trouble, for the freight which they bring must go to Barranquilla, and the coffee which they take away comes down the river. The Magdalena carries a great deal of mud and sand, and has a very large delta at its mouth. You remember that jetties at the mouth of the Columbia River help it to deepen its channel, but the Magdalena waters flow out through a wide, swampy delta, and make many shallow mouths. Therefore freight that comes down the river to Barranquilla has to be unloaded from the river boats, and taken by train over a little railroad seventeen miles long to the little port over which we flew. Cartagena is another important port of Colombia, which has rail connections with the Magdalena.

We shall make the trip up the river on a river boat that was built in the United States. The boat is driven by a big wheel, placed at the back where it will not strike



Fig. A. Many streams like this one flow out from the Andes Mountains in four South American countries. Which four countries? Tell something about the stream. What else do you see in the picture?

floating logs or sandbars or stones. We wait while the boat is being loaded. The shore of the river is not a pleasant place to wait. As the men load the freight which has come from the coast, perspiration streams down their faces. There is no sea breeze. It is a still, biting heat, and mosquitoes buzz and bite. We are glad to go aboard the boat and get behind the wire netting which covers every window and door and goes all around the deck. The passengers sleep on the deck. The deck is divided into two big rooms, one on each side of the boat; one room is for men and the other is for women.

Sights along the river. The river does not seem very large as you look at it on the map, but it is longer and carries more water than the Ohio River. When the Negroes have finished loading, the engine starts, the big wheel in the stern begins

to turn, and we are off. We pass some swampy land where trees, bushes, and vines are so thick that you could not walk through them without cutting a path. Now we come to a bit of higher land — land that is too high to be swampy, but low enough to be moist. Here we see a village surrounded by fields of corn, sugar cane, cassava, and bananas. There are trees whose big fruit is called *breadfruit*, and other tall trees with yellow fruit called *mangoes*. We see corn of all sizes and ages, for here corn can be planted any day in the year.

Our boat stops to leave some boxes of freight; the people of the village come down to the river to see the boat. There is not a white man or an Indian among them; only Negroes and mulattoes live in the hot, moist, low plains between the Caribbean Sea and the mountains of Colombia.

The low plain of northern Colombia. This plain is not a pleasant place in which to live. In the rainy season, which comes in May, June, July, August, and September, it rains almost every day. The streams rise and the water spreads over the lower lands. There are many mosquitoes whose bite carries malaria. There are many kinds of fever, and the people are often sick. It is more difficult for white people to live in this climate than for Negroes. The Negroes came from the hot parts of Africa, and seem to be able to stand the heat better than the white man.

There are small sugar plantations here and there on this plain of northern Colombia, but the machinery is old-fashioned and sugar is made only for the people of the country. In some sections the people grow cotton for home use. The cotton plants here live for several years and grow to be twenty feet high.

Much of this plain of northern Colombia is a grassland. There are many cattle ranches, but the people do not export meat. As we stop at this village, we see a shed in which are piled many bundles of hides waiting to go down the river for shipment to New York.

Petroleum. We stop several times each day at villages and little towns, and always there are packages of freight to be put off. Once each day we draw up to an iron oil tank and get more fuel for our boat. For a long time the boats on the river burned wood, but now oil has been found near the foot of the Andes and it is used for fuel. Men from the United States went there with machinery and drilled oil wells. They have been the overseers, while the Negroes and mulattoes laid a pipe line 375 miles in length, from the oil fields to the port of Cartagena. Every year millions of barrels of oil are put on steamers at this port, for New York, London, and many other cities.

Traffic on the river. We pass a steamboat stuck fast on a sandbar. In one day we see seven boats thus stalled. Now we see why a man stands always at the front of our boat reaching down into the water with a long pole, and calling to the man who steers the boat to tell him how deep the water is.

We see some Negroes going down the river in little dugout canoes loaded with the fruits from their trees and their gardens. The Negroes are going to market, at a town down the river. Often, when they get there, they can sell only half their load because there are so many others with things they want to sell. We also see other canoes coming up the river. They are coming back from market. That is a hard job. The current is swift and the boatmen may spend five days pushing the boat up the river with a pole, where they have floated pleasantly down in one day.

On the fourth day we stop at a town on the west bank of the river. Dozens of pack mules stand in the streets near the river. Much freight is put off, but we notice that there are no big boxes. That is because everything must be carried on mule back. There is no railroad and no wagons are here, only a path or trail, and that is so bad that sometimes the mules sink in the mud nearly up to their bodies.

This Magdalena River is the great central trade route of a country as large as a dozen of our states. Dozens of mule trails come down to the river from plains and mountains to the left of the river, and from plains and mountains to the right of the river. Thousands of pack animals are busy all the year carrying freight to and from the river. Sometimes it takes them weeks to make the journey.

On the fifth day the water of the river becomes more swift. The boat goes very slowly now, and finally stops. It can go no farther; there are falls just ahead.

The steamboat and the rapids. We are surprised to see a railroad here, six hundred miles from the ocean. The railroad was made to carry freight around the rapids and falls. All the freight on the boat is unloaded and put into little wooden cars. We get in with the other passengers. Several times, as we ride along the bank of the river, we see the white foam and hear the roar of waterfalls. After we have ridden several hours and have traveled seventy miles, we reach deep, quiet water once more, and the railroad ends. Another steamboat, smaller than the last one, is tied to the bank. How did it get here? The boat was put together right here, from pieces made in the United States and sent out in boxes.

The dry valley between the mountains. On the boat once more we ride all day up the river, to a place where the stream becomes narrow and this boat can go no farther. It is a week since we left the ocean, and we are still on the Magdalena River. We are now near mountains. In some places they come down close to the river. The hills near the river are not forest covered, for the rain winds that bring rain from the ocean cannot get into this valley very well. There is little rain, and we see thorny bushes, cactus, and other plants that make us think of the dry country in the western part of the United States.

A "To-Be-Continued" map of the northern countries. Trace or draw a free-hand map of the northern countries of South America. Make the map as large as your page will allow. Let the map show the Magdalena River, Cartagena, and Barranquilla; show in colors the Caribbean Sea, the mountains, and plains of Colombia. Show our trip



Fig. A. An Andean "freight train" going down from the high plateau country of Colombia and Venezuela to one of the ports. What may the mules be carrying?

into Colombia by a dotted red line. Draw a parallel to show how the trade winds blow upon them. Show, by drawing blue lines, three ocean routes to Barranquilla: from Miami, from New York, from Europe, with the distance in days of travel on each line.

Bright eyes see most. Divide the class into two teams, and see which team can name most scenes of this trip. Score 5 for each scene. Do not allow any player to hesitate longer than three seconds. At the first "miss," change sides. Here are a few scenes to help you begin: swampy land; fields of cassava, corn, bananas; freight moved from train to steamboat.

"Exports," "Imports," "Stay at Home." These are the names of three columns into which you may separate these words: hides, automobiles, petroleum, meat, fruit, eggs, coffee, machinery, corn, cotton, sugar, steamboats, bananas, chickens.

Old words, new lands. When did you read these words before: delta, dugout canoes, mulattoes, trade-wind shore? Use them in sentences about Colombia.

Words to use. Mosquito net, cactus, pack animal, sandbar, pipe line, waterfall.

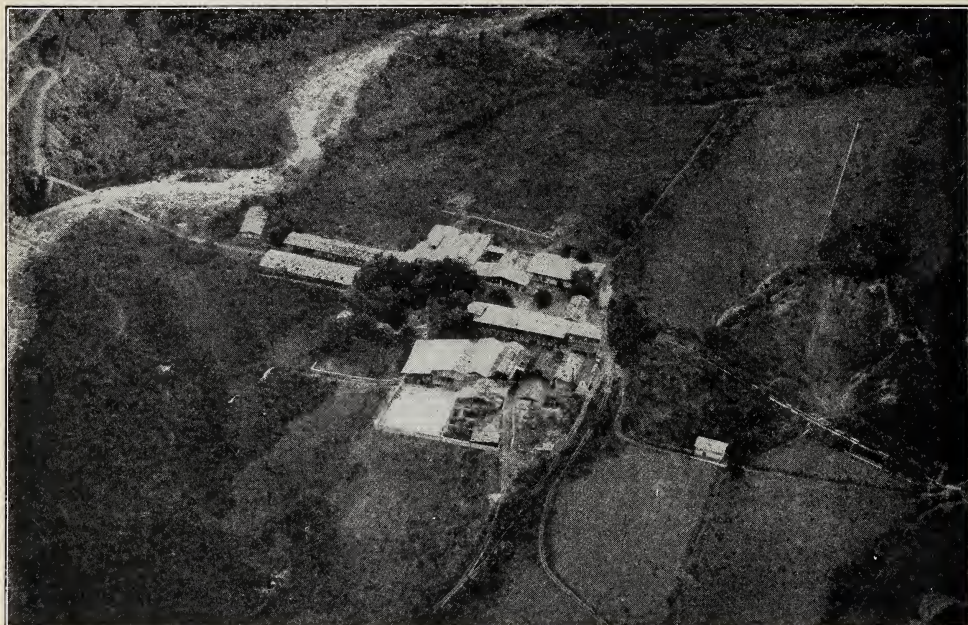


Fig. A. The coffee plantation on the slopes. If you look closely, you can see the drying flats. The coffee can be grown on the hillsides all about the plantation.

GOING UP THROUGH COFFEE SLOPES

The train to Bogotá. We now leave the river and get into a train that starts on the long climb to Bogotá, the capital of Colombia, far up on the plateau to the eastward.

The car is very small, for this is a narrow-gauge railroad. The rails are only about three feet apart. Our little train begins to climb. Up and up we go. The air grows cooler. After several hours we are four thousand feet above the level of the sea. We pass many villages, for these mountain sides and their little valleys have more people in them than any other part of Colombia. We are in the land of coffee.

The comfortable lands of coffee. The coffee tree loves the well-drained mountain side where the weather is warm, but

not hot. In a paved yard beside a little house we see a man with a hoe stirring a pile of something. He is drying coffee in the sun. Nearly everyone here grows a few sacks of coffee to get some money. The green forest we see on the mountain side above the village is not a wild forest, but groves of coffee trees that have been planted by man. The bushes and weeds have been cut away, and the trees of careful owners are kept trimmed so that they are not much higher than a man's head. Thus it is easy to pick the berries.

The coffee berries look like red cherries, and are picked from the trees by hand. The berries are dried, then put through several machines to separate the skin and pulp from the dark green seed or grain.

The freight rate to market. What a handy crop coffee is for these highland people! Their plantations are often far

back in the mountains, where live many people who have never seen a wagon or an automobile. The land is so steep that roads would be very costly, but these people have a way of taking their precious coffee to market. They put two sacks of coffee on the back of a mule or an ox, and the animal will pick his way over the roughest ground. If the people tried to sell lumber, they would find that the mules could carry only small pieces. If they tried to sell corn, they would find that it would not bring enough money to pay the freight. A sack of coffee brings much more money than a sack of corn (or wheat) would bring.

The mule or ox that carries the sacks of coffee down to the boat landing or the railroad station often brings back two packages of freight. The packages contain things that the people in the village want and will buy from the storekeeper.

A country of great differences. We might almost say that the coffee grower lives in another world from that of the people who live on the Caribbean plain and along the river bank. Up on the mountains he has no swamps nor many mosquitoes. The weather is warm, but not hot. We might call the coffee slopes the second story of the country. It is cool at night and he sleeps under a blanket. This is a more wholesome and pleasant place to live, and the people here are not like the people of the plain. They are *mestizos*, that is, part Spanish and part Indian.

Coffee land, the center of Colombian foreign trade. There are many coffee valleys and many coffee slopes on and in the mountains on the east side of the Magdalena. For hundreds of miles up and down the river there are coffee valleys back in the mountains. There are many coffee valleys, also, back in the mountains,

on the small streams that flow down into the Cauca River, and there are some on the eastern side of the eastern range of the Andes, where the streams flow down to the Orinoco. The coffee is of fine quality and it is the chief export of Colombia. Coffee brings in about three fourths of all the money Colombia has to pay for things she buys from other countries.

Do these cities surprise you? Here in the cool, wholesome mountains are some white people and many mestizos. One mountain province between the Magdalena and the Cauca rivers has twenty-seven cities, each with more than ten thousand people, and its capital city, Medellin, has a hundred twenty thousand people. It is a clean, healthful city, with cotton factories, shoe factories, ice factories, and many other factories to supply the needs of the people in the mountains. Between Medellin and the Caribbean are hundreds of miles of hot, unwholesome plain, without a single city large enough for us to name.

Add to your map. Bogotá, Medellin, Cauca River, Orinoco River.

A picture story. Pretend that you are a lecturer in an educational talking picture. Tell the story of coffee, using Figure 374-A.

Useful animals. How do the mule and ox help coffee growers on the mountain slopes of Colombia?

Begin a products map. Trace a map of Colombia or draw a large one. Put green dots on the map where the lowland crops grow. (In the margin keep a color key.) Put brown dots where coffee grows on the mountain slopes and in the valleys. When your teacher has selected the best map in the class, this child may draw his map on the board. You will want to add to this map in later lessons.

A half-done exercise. Here are two columns to be filled in. When you write something about the seacoast and river plains, write a corresponding thing for mountains and valleys.

*Seacoast
and river plains*

*Mountains
and valleys*

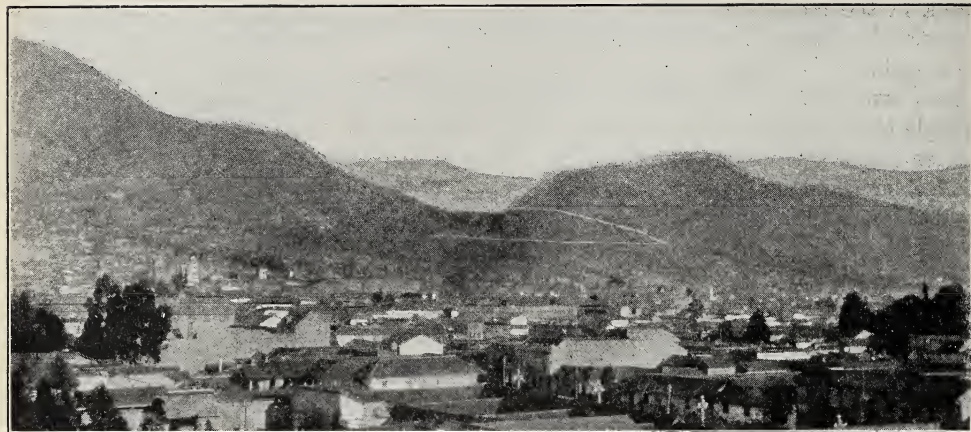


Fig. A. A part of the city of Bogotá, Colombia, as seen from a mountain side near the city. Locate Bogotá on Figure 369-A.

THE THIRD AND FOURTH STORIES OF COLOMBIA

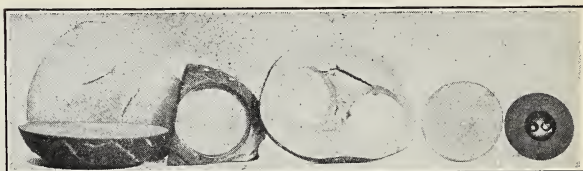
Up to the cool plateau. Let us go on with our journey. In eight hours after leaving the Magdalena our train has gone only twenty-five miles, but we are now more than 8,000 feet above the level of the sea. We have come to a high, level plain or plateau, seventy-five miles long and thirty-five miles wide. This plateau is higher than the top of any mountain in our own country east of the Mississippi River. It is cool and pleasant here. The thermometer is below 60°. It is so cool that we put on overcoats. We have been in the hot lands so long that we need to protect ourselves from a little coolness.

We see farmers harvesting wheat on the plateau. They are cutting it with a sickle. They planted the seed by throwing it out by hand, and they plowed the ground with a wooden plow drawn by oxen. They thresh wheat and get it out of the chaff just as people did in Old Testament times. You wonder why they use these old-fashioned methods, instead of using reapers and plows from the United States. Think of the cost of bringing

machinery on the long journey. The freight that comes from the United States to the plateau of Bogotá is loaded and unloaded eight times on the way. In the dry season the boats often have to stop entirely. Sometimes they stick for weeks and months on a sandbar, and it sometimes takes freight a year to get from the factory in the United States to the store in Bogotá. Why do they not build a railroad? It would cost too much. Perhaps the slowness of the river boats is a reason that the airplane route from Bogotá to Barranquilla is one of the first and most successful in South America. The passengers and the mail hop in one day by air from Miami to Kingston, the next day to Barranquilla. If one is in a hurry, he may fly on the same afternoon to Bogotá.

The cool capital of a hot country. After we reach the edge of the plateau, we go thirty miles to the city of Bogotá, the capital of Colombia. We are surprised to see what a big city Bogotá is and what fine buildings it has, and how many white people live there. During our journey from the sea, we have seen few people besides Negroes, mulattoes, and mestizos,

Fig. A. The *tagua*, or ivory palm tree, which grows in Colombia and other tropical countries, produces *tagua nuts*. The *tagua* nuts are a kind of vegetable ivory. They are used for making buttons. It is an easy and indolent kind of business to go pick up a canoe full of nuts and paddle away to market when you want a little money.



but in this city many white people live. They speak Spanish, dress in Paris styles, are proud of their electric lights, telephones, paved streets, street cars, water supply, wholesale stores, universities, and libraries. These people say that they are the center of education and culture in America.

Here the nights are so cool that we enjoy sleeping under blankets. We are happy to find that there are no mosquitoes. These things are true because we are on the plateau, a mile and a half higher than we were at Barranquilla. It is much more pleasant here than on the hot, low plain. Do you think the difference pays for making the long, hard journey that people must make to reach this distant place? The plateau around Bogotá is one of the most populous parts of Colombia. It has more people to the square mile than Iowa.

For their own food, the plateau people grow corn, beans, and many vegetables. Sometimes they grow wheat, but not so much wheat as they need, so some has to come from Barranquilla. They have sheep and cattle, and sell hides as well as coffee. They also sell gold and emeralds, which they dig from the mountains. There is one emerald mine in Colombia which produces nearly all the emeralds that are mined in the world. A little coal is mined near Bogotá, and a little iron is made. There are many small factories in Bogotá making things for home use, but not to send to foreign countries.

The Paramo, Colombia's fourth story. We might think of Colombia as being a

country that is four stories high. The hot, moist, low plains are the first story. The second story is made up of the warm slopes and mountain valleys where coffee, corn, and sugar cane are grown.

The high, cool, wheat-growing plateau of Bogotá is the third story. From Bogotá one can look away in the distance and see the snow-capped tops of mountain peaks six or seven thousand feet above Bogotá. The country just below the snow line is like Alaska. The people call it the *Paramo*. It is cold — too cold for trees. It is covered with grass and fern. The wind blows hard and cuts you to the bone. There are many clouds and showers. The sheep, with their woolly coats, can stand it. Shepherds wrapped in wool blankets and wearing wool hats tend the sheep clear up to the edge of the snow. Lower down, between 10,000 feet and 12,000 feet, the farmers grow potatoes.

Add to your products map. Use red crayon to show where wheat is grown on the plateau around Bogotá. Add blue to show where shepherds live on the highest land of all.

A modern city. Give all the reasons you can think of why Bogotá is a modern city, and why so many people live so far in the interior.

A four-story country. Copy the following table on a sheet of paper, and fill in.

| HEIGHT | CLIMATE | PRODUCTS | PEOPLE | CITIES |
|--------|---------|----------|--------|--------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Find a picture that will illustrate each of the four stories.

COLOMBIA'S NORTHERN HIGHLANDS AND WESTERN COAST AND VALLEYS

The plains and mountains of Santa Marta. East of the Magdalena River the mountains are near the sea. High hills surround the safe harbor of Santa Marta. The snow-capped peaks of the high Sierra de Santa Marta look out over the Caribbean and over the lower Magdalena Valley. The good harbor of the town of Santa Marta is close to a wide plain of splendid banana land. The plain is crossed by many snow-fed mountain streams that are used to irrigate the banana fields in the dry season. A short railroad runs from the harbor through the banana plantations, where there are thousands of acres of bananas and thousands of Negroes living in their thatched houses and working on the banana plantations, exactly as they do on the plantations of Central America and Jamaica. The same American company owns plantations in half a dozen countries bordering on the Caribbean. Santa Marta exports enough bananas to make four pounds a year for every man, woman, and child in the United States. Most of the bananas go to Europe. Bananas are the third export of Colombia, petroleum being second.

There is a splendid coffee region on the slopes and in little valleys up on the sides of the Sierra above banana land. Coffee is grown here exactly as it is grown in the central plateau of Colombia (page 374), but it can be brought down to the sea much more cheaply. Above the coffee we find again the third and fourth stories of Columbia. Here also is the fourth group of people. We have already seen Negroes and mulattoes, mestizos, and whites, and here are the pure-blooded Indians. They live in little clearings, growing corn and beans, wheat and potatoes, and pasturing their cattle

and sheep on the cold Paramo in sight of the shining snow.

The western coast of Colombia. I do not want to live on the western coast of Colombia. It is hot all the year, and the people who live there declare that in many places it rains every day. Perhaps they miscount once in a while, but it does rain almost every day. The ground is therefore always damp. The air is always damp and steamy. This makes it seem even hotter than it is. The many rains make many swamps and many mosquitoes and other insects, and many fevers and other diseases in the many small valleys of western Colombia and western Ecuador.

So much heat and moisture make the land a forest from seashore to mountain top — swampy forests along the shores. High up in the mountain tops where it is cool, there are forests of oak and other trees which we have seen in the United States. The forests in this corner of South America and in the Isthmus of Panama are so thick and swampy that for years at a time no one ever travels overland from Panama to South America.

There are no white people here except in a few little towns along the coast, and there are no Indians either, only a few Negroes. They live by *patch-and-thatch*. There are corn, bananas, plantains, sugar cane around their houses, and plenty of fish in the streams. If they want a little money, there are several ways of getting it. Perhaps you will see a man gliding down a stream in a dugout canoe loaded with coconuts or bananas for the people of one of the few coast towns. Or he may have something for export: rubber that he got from the wild trees in the forest, or some nuts of the *tagua* tree, called *ivory nuts*, used for making buttons. Some of these Negroes are placer miners, for the

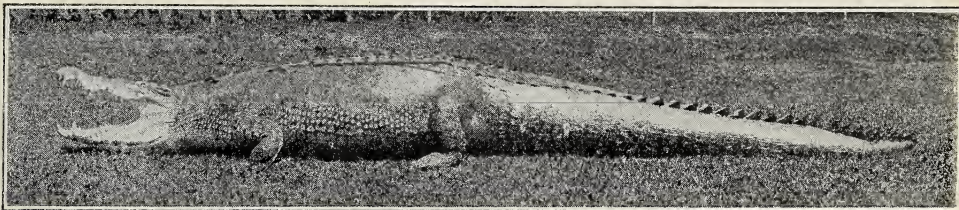


Fig. A. Name this animal. What useful articles are made from its hide? The rivers in the warmer countries of South America have plenty of these big reptiles. Sometimes they catch calves that come to drink.

sands along their streams contain the two precious metals, gold and platinum. Colombia is now one of the leading platinum producers of the world, and platinum is her sixth export in value. A few mules could carry all that is produced. A family can work its placer for a few days and then have their great pleasure — leisure. You and I would think it too hot to work, too, if we lived there and had as much malaria and fever as they do. A professor from the United States, riding through this country over one of the trails up from the coast, and seeing some of these people, said: "Behind Buenaventura and reaching to the foothills of the Coast Range is a malarious jungle, called the *Choco*, where it rains every day. Here no one lives save the descendants of the Negro slaves. . . .

"They live in palm-thatched bamboo huts, raised about a yard above the ground. The bamboos of the frame are tied together with lianas (vines), and the sides are of board. The builder needs no hammer, saw, nail, or screw; only the machete. Nor does the jungle black enslave himself with hoe or spade or plow or clothes. He slashes away the jungle, starts a patch of plantains, or cooking bananas, and plants a little corn. His sugar cane he crushes in a hand mill, and the juice he boils down to sugar. He fishes, hunts, converts molasses into rum, and rolls stalwart cigars of his own tobacco leaf. So he eats, drinks, smokes, loafs, and lets time

pass, with no vanities, no interests, no ideas, no standards, no outlook, no care for the future. . . ."

The Cauca Valley. Over the mountain from Buenaventura is the valley of the Cauca River, a flat land 15 to 25 miles wide and 150 miles long. The western range of the Andes shuts off the rain winds from the Pacific so much that this valley is only a grassland, much like the plains along the lower Magdalena. Like them, it is hot and unwholesome, the home chiefly of mulattoes and Negroes, but the soil is so good that it is as populous as Iowa with farms and cattle ranches.

Add to your maps: Santa Marta, Sierra de Santa Marta, Panama, Ecuador.

Add green dots to your products map to show banana plantations. Say something about the Santa Marta region, giving a harbor reason, a climate reason, a transportation reason, a labor reason, an ownership reason.

Broad hints. Write sentences about the western coast of Colombia, using these expressions:

1. Fevers and diseases.
2. No one travels overland.
3. No Indians or white people.
4. Patch-and-thatch.
5. Dugout canoe.
6. Something to export.
7. Placer mines.
8. Leisure.
9. Descendants of Negro slaves.
10. Huts raised above the ground.
11. Jungle black does not enslave himself.

Using an outline. Write about the Cauca Valley, using this outline: size, climate, people, population.



Fig. A. This picture gives you a very good idea indeed of the thick, tangled forest of the Amazon Basin.

THE FORESTS AND GRASSLANDS EAST OF THE ANDES

A land that is hard to reach. We have not yet mentioned the greater part of Colombia's land. Look closely at the maps, Figures 362-A and 369-A, and you will see that more than half of Colombia lies east of the Andes. Is this land high or low? warm or cool? What is the latitude? the southern boundary? the rainfall during each of the seasons shown in Figures 381-B and 381-C?

The Amazonian forests. Colombia has thousands and thousands of square miles of the great Amazon forest which we crossed in our airplane (page 361). We could scatter dozens of states the size of Connecticut and Massachusetts around in this Colombian forest. Indeed, it is quite possible that we might drop something the

size of Rhode Island down into this forest, and, unless it made a noise when it fell, they would not hear of it in Bogotá for a year or five years or ten years, for it might easily be in a place where no traders travel and even where no people live.

In most of this Colombian forest there is only about one person to five or ten square miles, and some of these are forest Indians who have nothing to do with the rest of the world. Some of them gather rubber and balata gum from the wild trees, and take them in boats down the streams until they finally reach Manáos.

The grasslands of the Orinoco basin. Part of Colombia east of the Andes is treeless. This large treeless area extends far over into Venezuela, clear down to the Orinoco delta. In this land it rains much from April to October, and then little

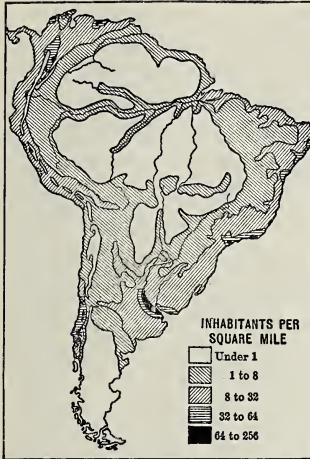


Fig. A. Population map of South America. Where is dense population? scant population?

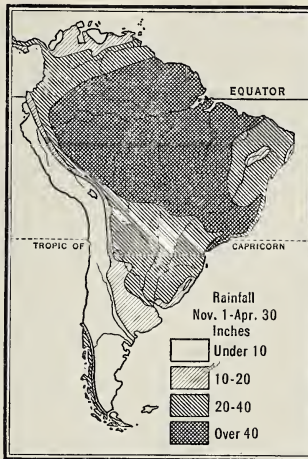


Fig. B. This map shows the average rainfall over South America from November 1 to April 30.

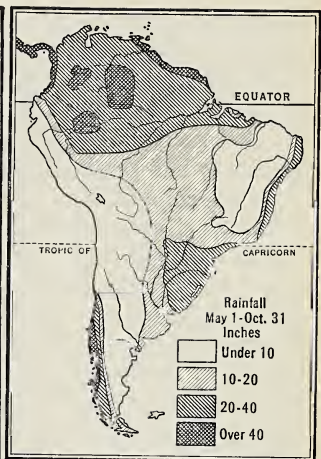


Fig. C. This map shows the average rainfall over South America from May 1 to October 31.

from October to April. This does not suit trees; they need rain more regularly, but grass grows in the rainy season and dries in the dry season. Thus we have a grassland. The grass is not nice, soft, rich turf, such as we see in the northeastern and north central parts of the United States. It is bunch grass, as high as your waist—sometimes as high as your head and even higher—big, coarse stuff, tender when young, but dry and hard in the dry season. Such grass is poor food for cattle.

In 1548 the Spaniards, sailing up the Orinoco River, released some cattle here. They have run wild from that day to this, and with them the half-wild mestizo cowboy, called the *llanero*. *Llanos* is the Spanish word for plains. This grassland is often called the *llanos*. For many years the *llanero* rode around on horseback taking care of his cattle. He could sell little but hides, for the grass of his land is poor material to fatten an animal and make it into good beef.

The rainy season and the dry season. In the season of the rains and the damp,

sticky heat, the rivers overflow and the level plains become lakes miles across. The cattle walk up to the higher places, which stand out as islands. Often the cattle eat off all the grass from these islands, and try to swim away to others which they see in the distance.

When the rains stop and the water flows away slowly, it leaves swamps from which millions of mosquitoes and other insects rise. Fevers and diseases of cattle and men thrive. Now comes the time when ticks crawl on the animals by the thousand and suck their blood. The grass grows rapidly for a time, but soon gets dry and dead and hard and poor. This is the season of dry, burning heat. Sometimes many of the cattle starve to death in great droughts. You may well be glad that you do not have to earn a living here.

Cities and trade. Ciudad Bolivar, 230 miles up the Orinoco River, is the trade center for all the wide *llanos* of both Venezuela and Colombia, but it has only 16,000 people. Steamboats regularly come up to it from Port of Spain, Trinidad.

Smaller boats travel up 1,500 miles of the Orinoco and its branches, stopping at little towns, here and there, which are built upon bits of higher land near the river. These boats bring supplies to the ranchers. They carry away hides and sometimes live cattle, which are shipped down to Port of Spain and to the cities of Guiana.

There are no roads across the llanos, except one poor cart road from Ciudad Bolivar to Caracas. You must travel on horseback and ford the streams, which you can do only in the dry season. If a person in Caracas wishes to go to Ciudad Bolivar, or some place farther up the river, he takes an ocean steamer to Port of Spain, and there changes to a river steamer to Ciudad Bolivar. If he wants to go farther inland he transfers here to a smaller boat. Find these places on the map (Fig. 362-A).

The Colombian llanos. In the rainy season the steamboats go on to the Colombian boundary, but in the dry season the streams are too low. So you see that a rancher in the Colombian part of the plains must grow most of his own food. Hence he has patches of corn, cassava, bananas, and beans about his thatch-roofed house. He is a *patch-and-thatch* farmer.

The ranchers who live near the base of the Colombian Andes sometimes take their cattle up to Bogotá and other cities of the plateau. This is a long, hard journey up steep, stony, slippery trails through the thick forest, where it may rain several times a day. Sometimes the poor cattle wear their hoofs out on the stones, and have to be left or sold by the way. When they get to the plateau, they are so worn that you can hang your hat on their hips, and they are very poor meat indeed. Now you can see why the 200 ranchers, who live on the thousands and thousands of square miles of the Colombian llanos, sell little but hides.

The best part of the Venezuelan llanos.

The mountains that wall the northern part of the Venezuelan llanos are not so high as those along the Colombian part. It is therefore easier for the cattle rancher in the Venezuelan grasslands to send his cattle to the highland markets of Caracas, Merida, and other towns. Some of the people of the towns at the foot of the Venezuelan Andes irrigate land with mountain streams. They have good farms, from which mule trains carry bananas and sugar to the people who live in the Venezuelan Andes.

Add to your map of the northern countries: Amazon River, Ciudad Bolivar, Port of Spain, Trinidad, the Guianas, Caracas, road from Ciudad Bolivar to Caracas, Venezuelan Andes, Merida.

Add colored dots to your products map to show the Amazon forest; the Orinoco grasslands. Are you keeping a key of colors on your products map?

An imaginary journey. Suppose you wanted to travel from Caracas to the upper branches of the Orinoco; pass your finger on the wall map, or draw a free-hand map, to show how you would go. What would be your means of travel? Describe what you would see on your trip.

Can you tell: 1. Why Colombian ranchers must raise most of their food?

2. Why Colombian llaneros sell little but hides?

3. Why there are good farms at the foot of the Venezuelan Andes?

4. Why there are few roads across the llanos of the Orinoco?

5. Why you do or do not want to live in the Colombian forest?

A choice of evils. 1. Which is worse: the rainy season or the dry season in the Orinoco llanos? Why?

2. Which is worse: sending Colombian cattle to market down the Orinoco, or up to the plateau of Bogotá? Why?

Strange new words. Use each of the following words in sentences: balata gum, bunch grass, llaneros, llanos, ticks.



Fig. A. The pods, or fruit, of the cacao tree hang from the trunk and larger branches as you see in the picture at the left. The pods are about the size of a large cucumber. At the right the workers are breaking open the pods and picking out the cacao beans. These are dried and ground to make chocolate and cocoa.

© Publishers' Photo Service

THE NORTHERN HIGHLANDS OF VENEZUELA, AND THE MARACAIBO BASIN

Venezuela is like Colombia. It is easy for us to learn about Venezuela, for every part of it is much like some part of Colombia. Your maps, Figures 362-A and 369-A, show that the highland of Bogotá extends northward and then north-eastward into Venezuela, and extends along the coast almost to Trinidad. Indeed, Trinidad is a piece of this highland that has been cut off from the mainland.

We found that in Colombia the capital and greatest center of population and industry was on the plateau of Bogotá. We find exactly the same thing in this northern highland of Venezuela. It is really only the other end of the highland of Bogotá.

This small part of Venezuela has the bulk of the people of that country because there they can live above the moist, hot plains of the Orinoco, or the Maracaibo basin, and away from the malaria and

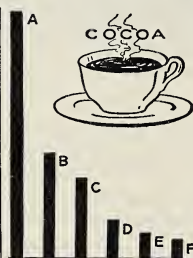


Fig. B. Six leading cacao-producing countries (1933-1934). The "Gold Coast" is in Africa.

| | Pounds |
|---------------------------------|---------|
| A. Gold Coast | 210,800 |
| B. Brazil | 90,000 |
| C. Nigeria | 69,481 |
| D. Ivory Coast | 31,789 |
| E. Dominican Republic | 22,461 |
| F. Ecuador | 16,909 |

A short time ago Ecuador led in cacao. Cocoa is one of the products made from cacao.

fevers and diseases. They grow plenty of corn and beans, which are their chief food. They also grow much coffee and cacao for export, to get money with which to buy factory goods. For a long time coffee and cacao were the chief exports of the country.

Another four-story land. South and southeast of Lake Maracaibo is a mountain range called the *Sierra Nevada de Merida*, which means "the snow mountains of Merida." Like the highlands of Colombia, this is a four-story land, with bananas and cacao in the lowlands; above them the zone of corn and coffee; next higher the zone of wheat, barley, and potatoes; then paramo pasture lands, and finally the snow.

Cacao. The cacao tree produces the beans from which chocolate is made. The tree is very particular where it grows. In the first place, the climate must be very hot. So this tree does not grow more than 3,000 feet above the sea. In the second place, it needs much damp air and moisture; so it is found only where there is more than forty inches of rain a year.

The cacao bean is borne in a big fruit that is something like a cucumber. A high wind will blow it off the tree, therefore cacao must grow only in sheltered valleys where hard winds do not blow.

These people sell cacao or coffee. Almost every farm in the mountains below 6,000 feet has, around the house, corn and beans, sugar and cassava, bananas and bread-fruit. From 6,000 to 10,000 feet they grow wheat. In the upper edge of the wheat land, small quantities of barley and potatoes are grown up to 13,000 feet.

The part of the highland east to Puerto Cabello is not so high as the western part. It does not reach above the warm zone of coffee. In this part of the upland is the densest population. There are some rich, level plains where the farmers can grow splendid food crops, while the coffee and cacao grow in the near-by mountain valleys.

Easy to reach the sea. The mountains of Venezuela come to the seashore. Therefore the people of Venezuela have a much easier time than do the people of Colombia, in getting their export produce to market. The railroads that go up to the plateau from Puerto Cabello and La Guaira begin climbing at once, just as does the railroad to Bogotá when it leaves the Magdalena River and starts up to the plateau. Recently the government has built a cement road from La Guaira to Caracas, the capital, and a good road goes on through the center of the plateau to the

boundary of Colombia. In a few years they expect to ride in automobiles all the way to Bogotá.

Dry land and goats. Lay your ruler on the map so that you can just see above it the towns of Maracaibo and Puerto Cabello. You notice that there is a peninsula to the north of this line. This land, which is about the size of Massachusetts, is not very high. It is not high enough to make the winds give up much rain. It is too dry for farming, except here and there in some little valley where a man can irrigate a few acres for corn, bananas, and cassava. It is a land of cactus, thorn bushes, and scanty grass, where the people make their living by taking care of flocks of goats. They sell meat and cheese to the people of the plateau, and export goat-skins.

This also happens in the peninsula that is the northernmost tip of Colombia.

The Maracaibo Basin. It is hard to look at the map (Fig. 362-A) and believe that the little Lake Maracaibo in north-western Venezuela is as large as Massachusetts.

There is much swampy lowland around its shores, and near the southern end there have for many years been plantations of sugar and cacao. A few years ago petroleum was found near the lake. American companies, English companies, and Dutch companies got permission to drill oil wells. Hundreds of people from the United States hurried there with pipes, lumber, engines, building materials, and many kinds of machinery to drill wells, and to build tanks and pipe lines. The wells are rich, and in a few years Venezuela passed Mexico and became the second oil producer in the world. Laborers left the sugar, coffee, and cacao plantations for a hundred miles around, and came down to get the big wages in the oil camps.

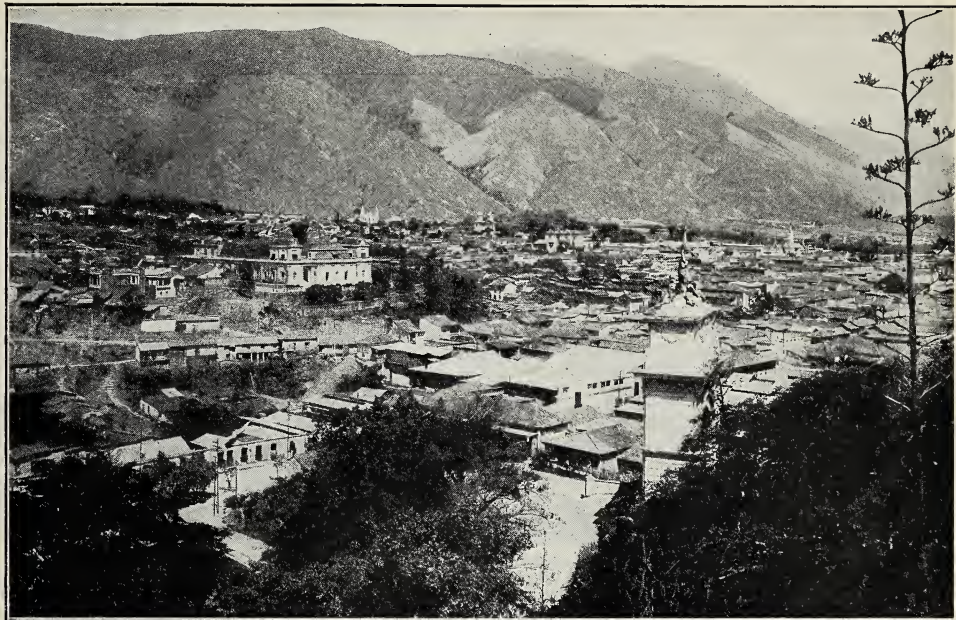


Fig. A. Caracas, capital of Venezuela. This city is sometimes called *The Pearl of the Andes*. Why is it on the plateau rather than on the coast?

Maracaibo grew rapidly and soon became the largest seaport, with more than half the exports of the country. The town of Maracaibo is a hot place. It has on the average only two inches of rain in five months of our winter time, and the Maracaibo weather gets hotter during this time than it ever does along the Amazon. But the Amazon heat is damper, and seems to wilt you more.

Add to your map the following places: If your map becomes too crowded with names, write only initials. Color the mountains and plains of Venezuela. Locate Maracaibo Lake, Maracaibo City, Puerto Cabello, La Guaira. Draw the railroads from Puerto Cabello and La Guaira to Caracas; the road to the Colombian boundary; dot the line to show the road to Bogotá.

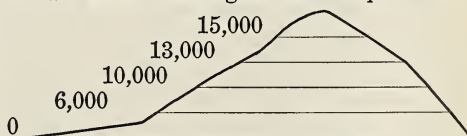
A comfortable home. What four conditions does a cacao tree need in its home?

For those who like chocolate. Draw a cacao tree (Fig. 383-A). Find in another book, pictures of cacao pods cut across, and

of cacao beans; draw the pictures in your notebooks. Make a cacao exhibit for your classroom?

Where people live. In what part of Venezuela would you prefer to live? Find this section on Figure 362-A.

Venezuela's four stories. Copy the following imaginary figure in your notebook, and opposite the numbers write a list of the crops that are raised at those heights, and a few sentences telling about each place.



Use, buy, sell, export. The people of Venezuela use some of the following, some they buy from us, some they sell to neighbors living on another "story," and some they sell to us for money. Separate the following into four columns: meat, cacao, machinery, breadfruit, cheese, sugar, coffee, goatskins, beans, petroleum, corn, factory goods, barley, wheat, bananas, cassava, goats, mules, potatoes.

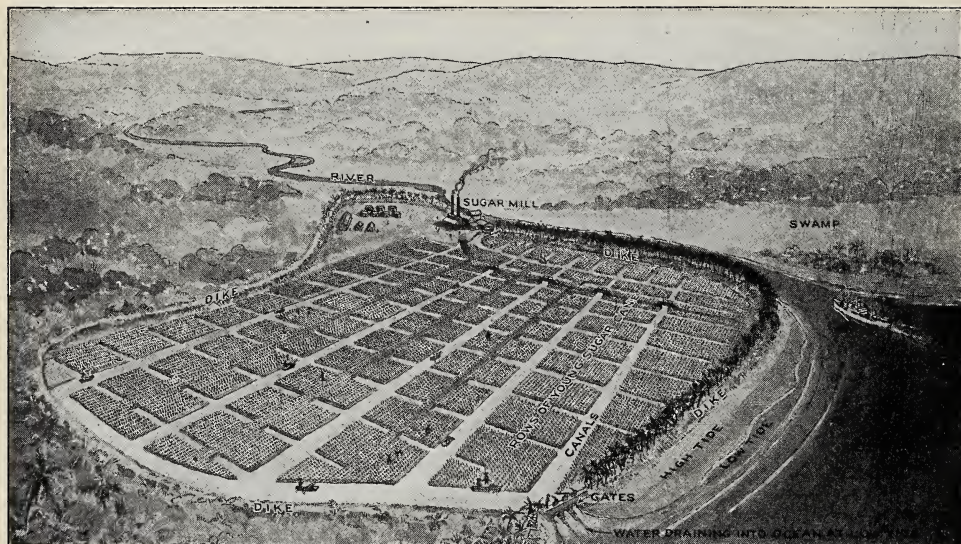


Fig. A. After you have read *The sugar plain*, page 387, tell about this picture. As you tell the story, find in the picture the following: the river which built the low, level plain; the dikes which men built; the sugar-cane plants; the canals which carry the fresh river water to the thirsty plants; the gates which are opened at low tide to allow the water from the canals to drain into the sea, and are closed at high tide to prevent the salt sea water from flowing over the sugar plants; the sugar mill; and the steamer which may carry the raw sugar to New York City.

THE GUIANA COAST LANDS AND THE GUIANA HIGHLANDS

The map. If you look closely at the maps, Figures 362-A and 369-A, you will see that more than half of Venezuela lies south and east of the Orinoco River, and that nearly all of this part of the country is in a forested region called the *Guiana Highlands*. Before we study it, let us study about the coast lands of Guiana.

The Guiana coast lands. England, France, and Holland each have a colony on the coast of South America, between the mouths of the Orinoco and Amazon rivers. England has ruled British Guiana since 1796, and given it the best government in South America. Indeed, it has had one of the best governments in the world. Dutch Guiana has also had a good government, but the land in both of these colonies is used but little as we have found to be the case in Venezuela; so we see that it takes something more than a good gov-

ernment to make people settle in a country and use the land.

The people. Few people want to go to Guiana, where the heat and dampness never change, and the forest, with its stifling heat, its mosquitoes, and its snakes, covers the land from the shore of the sea to the tops of the mountains. Those people who do go there do not want to work much in the heat. The Europeans who settled along the coast have brought two lots of people there to work for them. The first were Negro slaves from Africa, brought in the 1600's and the 1700's. They were made free a hundred years ago, and many of them at once moved into the forest, which is like their old home in Africa. There they live to this day by *patch-and-thatch*, much as they had lived in Africa. They are called *Bush Negroes*. Not many years ago the British government brought people from British India to work the plantations. These came on

contract, promising to work a certain time, after which they were free, and now they make up nearly half of the people of the colony. They brought with them the knowledge of growing rice, and they now grow enough to supply the colony and have some to export. After all these settlements, you may want to know how many people British Guiana has to a square mile (see Appendix).

The sugar plain. Only a very small part of British Guiana is cultivated. Nearly all of this is in a strip a few miles wide along the seashore, where the trade wind blows in from the sea, making it somewhat cooler. This coolness makes it healthier for men and even for sugar cane, which is the chief crop they grow. Sugar cane is grown on lands built up by sand and mud (Fig. 386-A), which the rivers have washed down from the interior and spread along the seashore. The cheap sugar from other countries may cause Guiana to produce less sugar.

The Guiana highlands, a great forest region. The Guiana highlands cover nearly the whole area of the three Guianas, and more than half that of Venezuela. They are six or seven times the size of New England. The Venezuelan part has about one person to four square miles, and there are not many more in the rest of it.

Balata is the one product produced over much of this very large and almost uninhabited region. A crew of men go into the forest, find the balata trees, and cut the trunks with knives. The latex runs out slowly, and gathers in lumps which dry and stick to the tree. The men pick off these lumps of dried material, which is a kind of hard rubber, and carry it down the streams in canoes. Some of it comes down the Orinoco, some down the various rivers of Guiana. The balata gatherers work in steaming heat. It rains on them nearly

every day. They are sometimes bitten by snakes whose bite is death, and by a fish in the river that bites pieces out of the men so that they sometimes bleed to death. Then there are malaria and many tropic fevers. It is easy to see why the forest does not have more people in it.

Gold and diamonds. Many of the streams in the Guiana highlands have gold in the sands along their banks. For more than a hundred years, people have been going far into the interior and working little placers here and there. A very famous gold mine, called *El Callao*, is reached by a cart road, which leaves the Orinoco near Ciudad Bolivar and extends 200 miles into the forest. An oxcart can make this journey in from two weeks to two months, depending upon the mud and the roads.

Recently a diamond mine has been found in the interior of Guiana. It takes twenty to twenty-six days to reach it in dugout canoes, which must be poled up swift currents and dragged around many rapids. The mines are in the dense forest, where green vegetables and fresh fruits are not to be had. Only Negroes can stand the climate. There is a plan to use airplanes to carry people to the diamond diggings.

Bauxite, the material from which we make aluminum, is now being shipped in large quantities from British Guiana and from Dutch Guiana. The mines of British Guiana happen to be near a river, up which steamboats can pass. To get the bauxite, they cut away the forest, take a steam shovel and scoop away from ten to thirty feet of dirt, then they blast out the bauxite. This work is done by Negroes and forest Indians who get ten cents an hour. They stay because the mining company has built a beautiful town, has a good supply of food for them

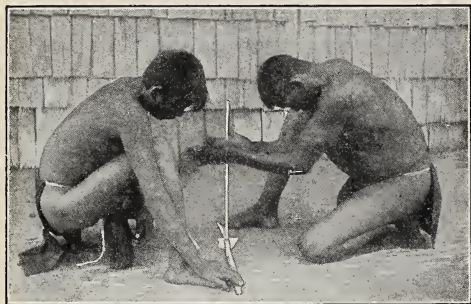


Fig. A. These Indians in British Guiana are making a fire by whirling the end of one stick against the side of another. This is a very old method of making fire, and is used in many other parts of the world.

to buy, and takes great care to keep the place healthful with mosquito nets, good drainage, and doctors always there.

Dutch Guiana. The Dutch colony of Guiana is almost exactly like British Guiana, except that it is not so large and does not have so many people.

French Guiana. The French colony also grows the same crops, but it exports nothing but gold, balata, and some extract of rosewood from the forest. France has a prison colony there, to which criminals from France are sent for punishment. The bad climate and cruel treatment have killed many prisoners. They think that going to Guiana is almost a sentence of death.

Add to your map. Add the plains of Guiana, the Guiana highlands, and the boundaries of the three Guianas. Show a few streams leading from the highlands.

Slow travel. If an oxcart travels 200 miles from Ciudad Bolivar to El Callao in two weeks, how far does it travel in a day? How far in a day if it makes the trip in two months?

Dutch dikes in Guiana. These are shown in Figure 386-A. Explain how the sugar fields of Guiana are drained; how they are fertilized. What would happen if we made the Mississippi River do this kind of work?

Big and little blanks. Fill in with phrases or words. Copy the completed sentences correctly.

1. The rulers of Venezuela are called —, but they are more like — because —.

2. People from the United States and Europe could help Venezuela by —, but they are afraid to go there because —.

3. White rulers of British Guiana have brought — and — to work on their plantations.

4. Freed Negro slaves who went to live in — are called —.

5. Most of the people of the Guianas live near — because —.

6. Few people live in the Guiana highlands because —.

7. Even gold and diamonds do not bring settlers to the Guianas because —.

8. Much bauxite is mined because —.

Tell how. Tell how Colombia and Venezuela are like each other. Are the Guianas like Colombia? Explain.

How can we make trade? 1. Who can make the longest list: (a) of products of the northern countries of South America; (b) of exports from these countries; (c) of goods imported into them?

2. What would you do to induce the people of these countries to buy more things from us? to produce more things for export?

What is the reason? From the index, find the area and the population of each of the northern countries of South America. Find some states of the United States that have about the same area as these northern countries; find their population. Why do more people live in one place than in another?

A game like "Pinning the Tail on the Donkey." Divide the class into two teams: the Reds and the Blues. On the board or on a large piece of paper, draw a large map of the northern countries. Give the two teams little circles of red or blue paper, or pieces of red or blue chalk. A child from the Reds calls the name of a city or river, or something else in the northern countries; a child from the Blues places a blue dot of paper or chalk in the right position on the map. When each child on the Blue team has had a turn, the Reds have their inning. At the end of the game, count the red and blue dots to find who won.

Things you never saw in our country.

1. Complete the following lists: Products of the northern countries of South America which are not found in the United States are cassava, balata, —.

2. Sights which we saw in the northern countries of South America, but not in the United States, are: Bush Negroes in the Amazon forests, patch-and-thatch farmers, —.

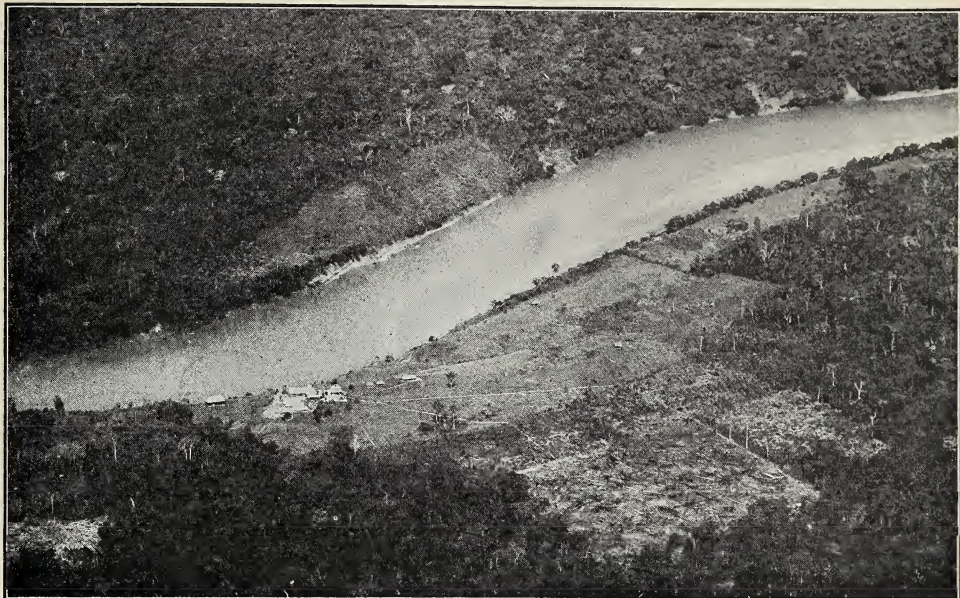


Fig. A. One of the many streams of the Amazon River system as seen from the air. The buildings in the picture belong to a German who left his native land to make a new home in this forest wilderness. See the clearing which he has made on both sides of the river.

THE EASTERN COUNTRIES OF SOUTH AMERICA THE AMAZON VALLEY AND NORTHERN BRAZIL

The greatest river. Brazil has the greatest river in the world. No other river brings so much water to the sea. The Brazilians call it the *Rio Mar*, or sea river. On the map (Fig. 362-A) find the source of the Amazon, and its branches. Ocean steamers go up this great river for five to seven days before they come to the city of Manaus. The river is forty feet deep at Manaus even at low water, and it is two miles wide at the Peruvian boundary. Big river steamers go up to the city of Iquitos, Peru. Each year, in the season of greatest rain, the river rises at Belém (Pará) from thirty to fifty feet. At Iquitos it rises twenty-five feet.

In this time of floods, the river and its

branches overflow their banks and flood the forest for miles on either side. In one place the water is said to be 500 miles wide in the season of flood. Of course, people can travel only in boats, which must find their way between the tops of trees. The Amazon is indeed the king of rivers. Find your home on the map, and measure to a place 500 miles distant. Does that not help you to understand the immense size of the Amazon?

The greatest tropical forest. The Amazon Valley is hot and wet all the year. The hot, moist climate makes the forest so thick that man often has to chop out a path before he can pass. The greater part of the Amazon Valley is covered by the world's largest tropic forest. Jungle and trees, trees and jungle for hundreds and hundreds of miles in all directions. It is the home of monkeys and birds.

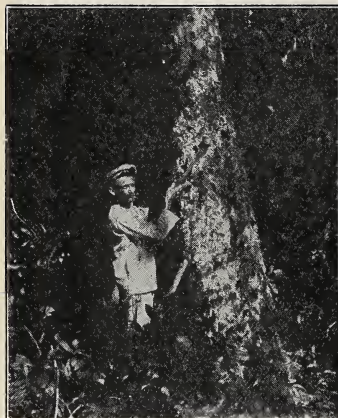


Fig. A. The Amazon jungle, almost as dark as night, except where patches of sunlight get through the dense tree growth. The rubber gatherer is tapping a rubber tree.



Fig. B. There are several things for you to find in this picture: finished ball of crude rubber; ball of rubber being formed on a stick; a pan to catch the latex which drips from the ball; a pile of urucuri nuts which burn with dense smoke and acid fumes. The acid fumes cause the latex to harden quickly into crude rubber.

There are rivers as large as the Hudson and the Potomac whose names we do not ask you to learn. Transplant this forest to North America and it would reach from Canada to the middle of Mexico.

Why does not this great forest have a great lumber business? There are several reasons. One is that hundreds of trees of the same kind do not stand together, as they do in the good temperate forests of the United States. In the tropic forest you will find perhaps only one tree of the kind you want in an acre. Around it there may be a hundred trees of kinds you do not want. Most of the trees are worthless, with crooked trunks, or they are soft wood which is valueless.

Suppose that you found a tree that you wanted, and you cut off its trunk near the ground, what would happen then? The tree would not fall even after you had cut it off. Nature has roped the forest together by tying each tree to its neighbors with the tough stems of strong, woody vines. I have seen trees in tropic forests that must have had a ton of climbing vines fast to them. What good would it

do to cut such a tree off near the ground if its top is tied fast to a dozen other trees? You would need to get a good climbing monkey with a saw and shears to go up and cut it loose from the other trees. But, while there are plenty of monkeys, they do not work for wages. All they want to do is to climb through the treetops, to chatter, to eat fruit and nuts, and to play. So it is very hard indeed for man to get lumber from a tropic forest.

Rubber. Late in the nineteenth century, people in Europe and America began to use much rubber, and nearly all of it came from the Amazon valley. The rubber gatherer loaded his canoe with food and supplies at Manaos or some other river town, paddled upstream for a few days, landed, built himself a thatched hut, and cut paths through the forest to the wild rubber trees. He cut gashes in the trunk of each tree and fastened a cup under each gash. White fluid (*latex*) flowed from the cuts and was caught in the cups (Fig. 390-A). Every day the rubber gatherer went around with buckets to get the latex. He took it to camp, built a

fire of palm nuts, dipped a wooden paddle into the bucket of latex, and dried it in the smoke from a fire of palm nuts. The dried latex became rubber. The man kept on dipping his paddle and drying the fluid until he had a big ball of crude rubber on the end of the paddle. At the end of the season he went back with a boatload of rubber balls, and sold them for enough money to enable him to rest through the rainy season.

From time to time the drought made famines in Ceara, a Brazilian state near the east point of that country, and thousands of people came up to the Amazon to work at gathering rubber. About the year 1900 people began to plant great orchards of rubber trees—plantations, we call them—in other tropic forest lands in southern Asia. It costs less to gather rubber from a plantation where all the trees are rubber trees, than it costs to gather it from scattered wild trees in the forest. But too many trees were planted. So much rubber was produced that suddenly, in 1913, the price of rubber fell. The price of rubber went down and yet down. The people along the Amazon, from that day to this, have suffered from hard times, although rubber is still the most important business the people have, and some Americans have started rubber plantations there.

On the river banks of the lower Amazon live some farmers who grow corn, cassava, beans, and bananas for themselves and for the people of Para. Some cacao is also grown. The climate suits cacao.

Brazil nuts. Back on the upland, the forests of the Amazon valley contain the giant tree that produces the Brazil nut. The fruit of this tree weighs three or four pounds, contains thirty to fifty nuts, and is as hard as bone (Fig. 391-A). Men who must go under that tree to gather the nuts



Fig. A. The shell in which a dozen or more Brazil nuts grow. This is one of the free foods produced by nature and mostly wasted in the tropic forest.

watch carefully and work quickly because a falling nut may crack a skull. Tons and tons of Brazil nuts and other useful nuts go to waste because few people live in this forest. It is hard to have good health (page 378) in such a climate. This land waits for man to learn how to conquer it.

A free-hand map of the Amazon. This is an easy map to draw. Show on your map: some big tributaries; the cities of Manaus, Iquitos, Para, and Ceara; show the boundary of Peru; the Andes Mountains.

Counting reasons. Why is there so little lumbering in the Amazon forest?

Why do the rubber gatherers suffer when there are hard times in the United States and fewer people can buy new cars?

Would you like to stretch the rubber story? Find how rubber was discovered. List the uses of rubber. Collect pictures or samples of rubber articles. Write its story for your school paper or as a letter to a friend.

A map on a map. Find maps of North and of South America drawn to the same scale. Trace the Amazon River and its tributaries on a piece of thin paper. Lay this drawing on top of the map of North America. What can you prove about the size of the Amazon River?



Fig. A. A part of the city of Rio de Janeiro, capital of Brazil and second city in size in South America. The picture sea, Rio (as it is frequently called) is said to have the most beautiful location of any



Fig. B. The harbor and city of Rio de Janeiro. Why do you think this is one of the world's best harbors?

THE COFFEE REGION OF BRAZIL

What the map shows about Brazil. Turn to Figure 369-A, and measure the distance in miles from the most northern point to the most southern point of Brazil; do the same for the United States. (Fig. 98-A). Measure the distance from the most eastern to the most western point of Brazil; do the same for the United States.

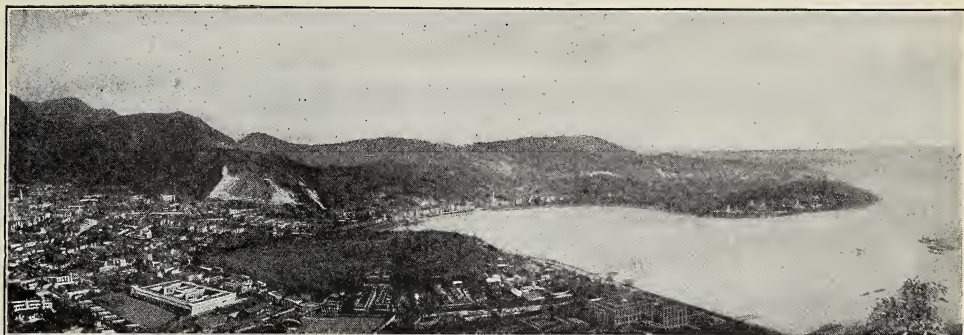
How does Brazil compare in size with the United States? Brazil contains half the people of South America. It has many

peoples of different languages, but Portuguese is the official language of the country. What is the reason for this?

A coast with a mountain front. You can sail along the coast bordering this coffee country for hundreds of miles. If the day is clear, you can see mountains that look somewhat like the Blue Ridge Mountains of Virginia or North Carolina. The Brazilians call their mountain range *Serra do Mar*. The mountains are nearly all covered with dark, green forest, but if you sail into the harbor of Rio de Janeiro, you see a most amazing city.

This city, the capital of Brazil, has far more people than any seaport in the United States other than New York and Philadelphia. Many people think it is the most beautiful city in the world. Its harbor is surrounded by hills and mountains, some of which are bare rock, some are forested. The city is spread out on the mountain side to an elevation of 2,000 feet. The wealthy people and the foreign residents go up by electric cars to their homes on its heights. Our ship sails into the harbor, past beautiful parks, to the wharves which are at the back of the harbor.

Two hundred miles from Rio de Janeiro is Santos, a city larger than Norfolk, Virginia. It is damp and hot. But there



was taken from the top of one of the hills back of the city. Oá a small plain between the mountains and the city in the world. Rio de Janeiro means *River of January*. Why was the city so called?

is so much trade that a hundred thousand people live there, merely because they get work to do at the port. This city and São Paulo, on the plateau, are to each other as are Vera Cruz and the city of Mexico. Santos, too, once had a bad name as an unhealthy city, but it is much better since we have learned how to control yellow fever.

A mountain with only one side. In a distance as great as that from New York to Cape Hatteras, N. C., the unbroken mountain follows the coast. At only one place, Santos, a railroad climbs the mountain. Here a double-track railroad connects seashore with interior. As we go up this railroad, we are surprised to find that it is almost as steep as a flight of stairs. The cars are pulled up by cables, which are run by great stationary engines. The cables pull the trains from power house to power house. As the car is pulled up and up the mountain, to a height of nearly half a mile above the level of the sea, one may catch glimpses of the sea through the thick and tangled forests. These are called *matta*, and come close to the track.

On reaching the top we are surprised to find that the other side does not decline as we would expect. Instead, we see the

country before us stretching away to the westward. In some places this plateau is almost level. Elsewhere, it is as beautifully rolling as the Piedmont of Virginia or the rolling prairies of Iowa.

The coffee plateau. What is the elevation of this plateau (Fig. 362-A)? In what direction do its streams run? This land is not swampy; therefore it is clear of mosquitoes and malaria. It has a warm, pleasant climate and a fertile soil. The climate suits coffee perfectly. Rain falls in spring and summer to make crops grow, and the autumn is dry. This aids the harvest greatly. The weather is warm, but not too much so, and the cool seasons are clear of frost except in the lowlands. For that reason the valleys are not much used except for pasture.

Negro slaves were employed on the coffee plantations in the early days of their development. Altogether about a million and a half slaves were brought to Brazil between 1800 and 1850. They worked in the mines and on the sugar plantations, and did practically all of the work in Brazil. When slavery was ended, most of the Negroes on the coffee estates left and went to the warm, rainy coast north of Rio de Janeiro. But workers were needed to cultivate and harvest the coffee, and

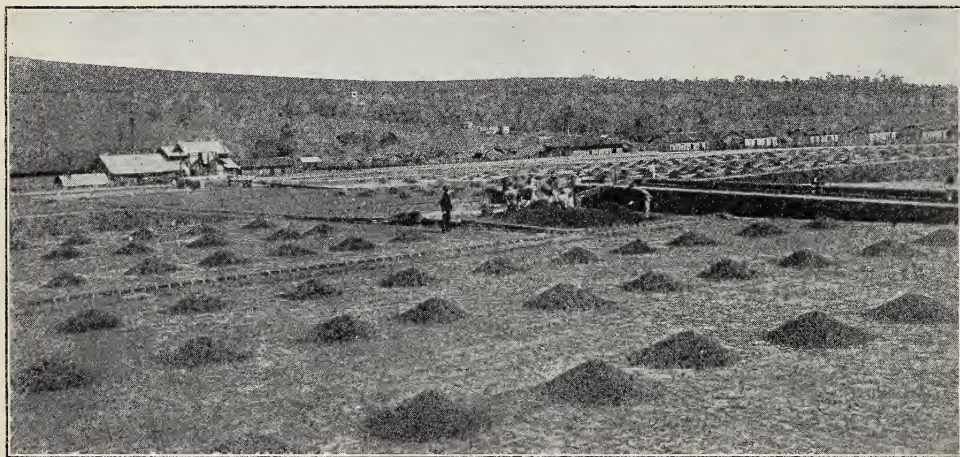


Fig. A. The men in the picture are spreading coffee in a drying yard of a plantation near São Paulo.

soon Italians began to come. The coffee plateau became almost like another little Europe. Today hundreds of thousands of people are at work here growing coffee. Of late, Brazil has received a new kind of immigrant, the Japanese. It is a long journey for them to make, but thousands of them have gone to South America.

The coffee plantation. A coffee plantation is begun by cutting down the forest and planting young coffee shrubs. The estates are usually very large, and a large number of workers is needed to care for them. Each workman, or *colono*, and his family care for from 3,000 to 5,000 trees. Until the trees are four years old and begin to bear, the *colono* is allowed to grow other crops between the coffee trees as a part of his pay. He usually plants corn, and has bean vines climbing up the corn stalks. Sometimes he plants cotton, sometimes sugar cane, and sometimes rice. This Brazilian rice is not planted in water, as rice is planted in Louisiana, California, or Japan. It is upland rice, and is planted and handled like wheat. This is also a good corn country, as are some other parts of Brazil (page 398). Altogether,

Brazil has nearly as much land in corn as in coffee, though we do not hear so much about it, for most of the corn is eaten by the people and live stock of Brazil.

In the fourth year the coffee tree yields coffee. Then the workman's job is to keep the ground beneath the trees free from weed and bushes. The workmen often plants more coffee trees just so he can have the land between the rows for his food crops. This has led to an over production of coffee. Sometimes unsold coffee has been used for locomotive fuel.

Many people and a great city. Because the Amazon valley has so few people, we must not get the idea that all Brazil has only a few people. On this coffee plateau there are as many people as in Georgia and all our states touching the Gulf of Mexico. The city of São Paulo, with its surrounding towns, is as large as St. Louis. Many lines of railroads enter São Paulo. In the city are great railroad stations, opera houses, theaters, clubs, fine stores, and many factories. Indeed, Brazil makes all of her own cotton cloth except the very finest grade, and most of her shoes, furniture, and paper, practically all of her

sugar, and exports some tobacco. Many mills are making cloth of wool and silk, and weaving jute for coffee bags.

Water power. It is too bad that there is no good coal in Brazil. Coal is heavy to import from the United States and England, and then to haul up to the steep railroad to the plateau. Therefore much wood is used as fuel, but water power helps out greatly. The streams make many falls in getting down from the plateau. So much power is sent by wire to São Paulo that the city is called the *Electric City*.

Other crops and resources. There are many unused resources of land and water power on this fine plateau, which may be used in the future. For many years the coffee region, like our own cotton region, sold only one product and bought almost everything else: coal from England; locomotives from the United States and Belgium; oil and gasoline from the United States; clothes from Europe; flour and meat from Argentina; iron, automobiles, and sewing machines from the United States; dried codfish from Newfoundland and Norway.

During the World War, when everything was scarce, the people of this sub-tropic region began to grow much larger quantities of all their crops. Shiploads of corn, rice, and dried beans were exported. Modern packing houses were built in São Paulo and in Rio de Janeiro by men from Chicago, and beef began to be exported to Europe by way of Santos.

Iron ore. In a short time this region may be exporting more iron ore than any other country in the world. The ore comes from the mountains in the interior, in a state called Minas Geraes. It is the richest iron ore thus far discovered, and there is much more of it than in our mines near the west end of Lake Superior.

A railroad four hundred miles long has been built from the mines to Victoria, where special ore docks were built to receive it. Some of the iron may be smelted for use in Brazil. It is expected, however, that more and more will be shipped to the furnaces of North America and Europe, which are near to the necessary fuel. Manganese, a metal added to iron in making steel, is also exported from Minas Geraes.

Trade. Brazil ships about two thirds of the world's coffee. Coffee makes up about two thirds of the value of her exports. She also ships some sugar, cotton, beans, cacao (page 397), beef, and hides (page 396).

Rio de Janeiro, the capital, has a great foreign trade and is the outlet of a part of the coffee industry.

Iron and steel, machinery, wheat, and coal are the chief imports of Brazil.

Paint a picture. Copy and color the picture of the harbor of Rio de Janeiro.

Add to your "To-Be-Continued" map. Add the coffee and iron regions of Brazil.

Appoint a committee. Choose three as tourists returned from eastern Brazil to lecture before the class. Let the committee plan to tell you about the kind of country they visited: Rio de Janeiro; coffee plantations; São Paulo; Santos; iron mines.

Questions that make us think. 1. Why must Brazil import iron machinery, though there is so much iron in Brazil?

2. How can Brazil manufacture so many things if she has no coal?

3. Why is it so hard to ship products to the coast?

Copy and fill in this table. Title: The Coffee and Iron Regions of Brazil.

| PRODUCTS | MANUFACTURES | IMPORTS | EXPORTS |
|----------|--------------|---------|---------|
| | | | |

New words to use in sentences: Matta, volcanic soil, malaria mosquito, double-track railroad, cable, Electric City, jute. If you cannot think of a sentence, copy one from the book.



Fig. A. These cattle are an English breed. They have been brought to Brazil, Argentina, and many other South American countries in order to improve the kinds of cattle raised there.



Fig. B. *Tasajo*, or jerked beef, hanging on racks to dry in the sun. Why is this a good industry for a far-away place?

SOUTHERN AND EASTERN BRAZIL

What the map tells us. Find the northernmost point of Brazil. Now find the place on the eastern coast of North America that is as many degrees north of this point as southern Brazil is south of it. Find places on the eastern coast of the United States that are as far from the Equator as the Brazilian port of Puerto Alegre and the southernmost tip of Brazil. The climates of these two regions in the two Americas are much alike, except that Brazil has fewer cold days in winter.

The southern frontier. Brazil has three frontier regions, the Amazon (page 389),

the campos (page 398), and southern Brazil. South of the coffee country, Brazil has an area larger than Florida, Georgia, Alabama, and Mississippi, and it has more than half as many people. Much of this region is covered with forest, not unlike that which we find in our own Southern States, but the southern and western parts of it are a grassland like parts of Texas.

The farmers in the clearings. Most of the people in southern Brazil are farmers, and many of their farms are on land that was forest a short time ago. Many fields still have stumps in them, and in many places crops are growing among deadened trees that have been left standing.

The people of southern Brazil have three main exports. The first is meat and hides from the grasslands of the southwest. Cattle can eat grass all the year. The cattle are slaughtered and sent to other parts of Brazil as dried (*jerked*) beef. Some are frozen in packing plants at Rio Grande do Sul, and sent to Europe in refrigerator ships.

The forests of these states contain many trees of *yerba maté* (page 406). About four hundred million pounds of these

leaves are gathered and dried to be used as tea in Brazil, Uruguay, and Argentina.

The lumber of this region is the third export, and promises to become a great trade. It is estimated that there are 800,000,000 board feet of Paraná pine. This is a tall tree whose trunk is sometimes four or five or six feet in diameter. There are many sawmills cutting this timber to supply the Brazilian market, and some is sent to Uruguay and Argentina.

The future. This region may easily hold several times as many people as at present, and also export great quantities of lumber, meat, and other farm products.

The eastern coasts of Brazil—the old Brazil. The cities of São Salvador (Bahía) and Recife (Pernambuco) are the old Brazil. Four hundred years ago the Portuguese settled here and started sugar plantations. Sugar plantations are still here. São Salvador was the capital of Brazil until 1763. It is still the fourth city of Brazil, and Recife is third.

It was easy for the Portuguese to settle here because the seashore has a coastal plain. The mountains are farther inland, and not so high as farther south. A number of small rivers come down to the sea, and have built up alluvial soils near which the settlers made their ports. It was easy to bring slaves from Africa, to start sugar plantations, and to send sugar, molasses, and rum back to Portugal.

Cacao. South of São Salvador, the trade wind blows against the coast all the time, and every month has rain. This warm, wet climate exactly suits the cacao trees. So the *patch-and-thatch* farmer plants a few dozen trees, cuts the bushes away from them now and then with his machete, and gets his money by trudging off to the nearest market with a few bags of cacao beans. By this means the Brazilian state

of Bahía became the greatest cacao exporter in South America.

Tobacco, cotton, and sugar. North of São Salvador is a region which has a dry season in autumn. This climate does not suit cacao, but it is excellent for curing tobacco, picking cotton, or cutting sugar cane. So here the *patch-and-thatch* farmers sell tobacco, cotton, or sugar. In the drier parts of the region, a variety of cotton which lives for four or five years does well. In the districts with more rain, the annual variety is grown. The Negroes often grow beans, corn, or cassava between the cotton plants. São Salvador and Recife have mills making cotton cloth for the people.

A map on a map. Trace and cut out a map of Brazil and one of the United States, drawn to the same scale. Paste one on the other. What can you say about the size of Brazil? about the size of southern Brazil?

Your two cousins. Pretend that your two cousins want to go to South America to get a job. Tell the class what the boys might do in southern and eastern Brazil. Do not forget meat and hides and lumber. Would they like to raise cacao? Give reasons for your answer.

Questions that make us think. 1. Why do white people prefer to live in southern Brazil, rather than in northern Brazil?

2. Why do few Negroes live in southern Brazil?

3. Why are the states of Paraná, Santa Catharina, and Rio Grande do Sul called frontier states?

4. Why does southern Brazil have smaller forests and more lumbering than Amazonia?

Farm and products riddles:

| | |
|---------------------------------------|--------------|
| A tea made from forest leaves | Y — M — |
| Principal industry of southern people | F — |
| Principal export of southern Brazil | M — |
| Meat-packing cities | R—G—d—S—; P— |

Add to your "To-Be-Continued" map another color to show the plantation region of Old Brazil. Within this region show the cacao region south of Bahía, and the tobacco region north of Bahía.



Fig. A. Theodore Roosevelt saw these grassland Indians along the upper Paraguay River playing "football" with their heads. He said, "They use a light, hollow rubber ball of their own manufacture. It is about eight inches in diameter. The ball is placed on the ground to be put in play as in football. Then a player runs forward, throws himself flat on his face and butts the ball toward the opposite side. An opposite player, rushing toward it, catches it on his head with such a swing of his brawny neck and such precision and address that the ball bounds back through the air as a football soars after a drop kick."

THE CAMPOS, BRAZIL'S THIRD FRONTIER

A little used region. The interior of Brazil is a vast region, little used by man. Indeed, it is said to be one of the four parts of South America that needs to be explored. The maps show that it has heavy rainfall, but most of the rain comes dashing down in the few months of the rainy season, between September and April. Then the region is a land of streams, of grass, and greenness. The western part, the upper valleys of the Paraná and Madeira rivers, has thousands of square miles under water at this season. The hot, rainless months of the dry season, April to September, turn it all into a dry land of dead and yellow grass, scattered bushes, and small trees, except for the forests that grow along the streams.

Much of the Brazilian part of this great grassland is a plateau. In places there are mountains on the plateau that are high enough to have forests on them, but most of the land is scrubby grassland. It is so far away from boat or railroad that much of it is unexplored, unsettled, and unused, except by bands of roving Indians.

Cattle ranchers use the three corners of the *campos* that are most easily reached.

1. The people of the wet coasts of Bahía

and Pernambuco get meat from cattle that walk from the eastern campos to the coast.

2. The same thing is true of the coffee country. Some of these cattle are fattened on São Paulo corn before being sent to the markets of São Paulo City, Rio, and Europe.

3. River steamers on the Paraná River make it possible for the ranchers in that corner of the campos to ship jerked beef.

Add to your "To-Be-Continued" map. Add a colored spot to show the campos. Show the three corners of the region. Draw three dotted lines to show the paths of the cattle to market on the coast.

Troubles of the campos ranchmen. Many things seem to be against these ranchmen. Tell the hardships dealing with rainfall; temperature; cattle food; distance from market; transportation to market.

Count the ranchman's blessings. Tell about the free cattle food of the wet season; the cheap water route to market; the people of Brazil who buy meat; the climate in which to jerk beef; the saving in barn buildings.

Brazil at a glance. Copy and fill each space with two or three words. For instance, after "people" write "white" or "Indian"; after "climate," "wet summers" or "dry autumns."

| | TROPICAL FOREST | COFFEE | SOUTHERN | EAST COAST | CAMPOS |
|-------------|-----------------|--------|----------|------------|--------|
| People | | | | | |
| Climate ... | | | | | |
| Surface ... | | | | | |
| Products | | | | | |
| Cities | | | | | |
| Exports ... | | | | | |
| Imports | | | | | |



Fig. A. These cattle are feeding in the Argentine pampas. Each year there is as wonderful a show of pure-bred cattle in Buenos Aires as there is in Chicago. Notice how flat the country is.

ARGENTINA, URUGUAY, AND PARAGUAY

THE PAMPAS

What the map shows. Look closely at Figure 410-A. What city in North America has about the same latitude as Buenos Aires? Asunción?

In many ways Argentina is like the country west of the Mississippi and Missouri rivers. It is about the same size as the land between these rivers and the Sierra Nevadas and the Cascade Mountains, if you do not include the Rocky Mountains. Point out places in North America having the same latitude as southern Argentina; northern Argentina.

The eastern part of Argentina is a fine land for crops. It is a great plain, very level, with enough rainfall to make it a rich grassland where grass grows as high as a man's waist or shoulders. This plain, called the *pampa* or *pampas*, is about the size of Missouri, Oklahoma, and the parts of Kansas and Nebraska that are good for farms. Much of the soil of the pampas was blown there as dust from the deserts to the west. This makes rich, soft earth, a land without stones and easy to plow.

Machinery of any kind can run almost anywhere because the land is so nearly level. One pampa railroad has a perfectly straight stretch of track for 205 miles.

The cattle come. Soon after Columbus discovered America the Spaniards settled in Peru, Bolivia, and Chile. Some of them went over the mountains into north-western Argentina. Horses and cattle got away from them. By 1580 thousands of horses and cattle ran wild over the pampas. The half-Spaniard, half-Indian cowboys, called *gauchos*, needed only a fleet pony, a lasso, and a knife to go into the business of catching cattle and horses. They killed and skinned the animals and sent the hides to Europe.

Later, the *gauchos* began to sell jerked beef, or *tasajo*. This they made by cutting lean meat into long strips, salting it, and drying it in the sun. Such beef will keep for years. For a hundred years or more, jerked beef was the only kind of meat that could be kept and shipped in the tropics. From that time to this, Argentina has been sending large quantities of it to Brazil and Cuba; lesser amounts are sent sometimes to the other West Indies and to Spain.



Fig. A. This farm on the pampas is conducted by the Argentine government in the same way as our Department of Agriculture conducts farms in different parts of the United States. On these farms each government is trying to introduce new crops and to find better ways of growing old crops. Notice the flatness of the country.

In the early days, horses were kept because the hair from their tails and manes was sold to make haircloth.

After a time, people from Europe began to make beef extract, which is really putting the essence of a whole animal into a few bottles. Next came canned beef. Then, in 1877, a ship with refrigerator compartments took a cargo of frozen beef from Buenos Aires to Europe. This started a great business. But the bony, lean cattle of the pampas were not good enough for the European market; so cattle from England were imported. Now there are splendid herds of the finest kind of meat cattle.

Alfalfa and cheap meat. Much of the pampa is splendid land for alfalfa, the best of pasture grasses. If fed on alfalfa, cattle can go to market one year earlier. The climate is so warm that barns are not needed. Cattle pasture all the year, and the packing plants at Buenos Aires, Rosario, Santa Fé, and Bahía Blanca are among the largest in the world.

Wool and mutton. In 1822 a shipment of wool was sent to Europe. The gaucho

scorns sheep, but many British shepherds came out and began to take care of sheep flocks, which increased greatly after 1850. At first only wool was shipped. After the refrigerator ships came, frozen mutton began to go to Europe.

Wheat and the farms. After buying wheat for a couple of hundred years, the Argentineans found that the pampa was a good region to grow wheat and corn and flaxseed. There were no trees to cut down, no stumps to bother with, no stones to remove. Immigrants came from Europe by the hundreds of thousands, and now about a third of the people of the pampa are foreign-born. It has become a great land of farms, sending to Europe and to the United States a great procession of steamers, ever moving back and forth. Argentina now ships about four fifths of the world's export of flaxseed, two thirds of its corn, a fifth of its wheat and flour, a fifth of its hides and skins, half of its beef, and a third of all its meat products.

The bull's-eye arrangement of crops. What change is there in the rainfall (Figs. 381-B, 381-C) as we go from the east to



Fig. A. A part of the city of Buenos Aires as seen from the air. In the left center of the picture is the Plaza de Mayo, around which cluster many of the Argentine government buildings.

the west in Argentina? Rainfall explains a kind of bull's-eye arrangement of crops. The eastern tip of Argentina is so flat that much of it turns into wide, shallow ponds for a few days after a heavy rain. This is all right for grass, but it will not do for corn and wheat; so this is the land of great sheep ranches and cattle ranches, and of dairy farms near the cities.

The next band in the bull's-eye has a rainfall of from 30 to 40 inches. Here the corn fields and the flax fields cover large areas among the sheep and cattle pastures. Then comes the zone of wheat, reaching 600 miles northward from Bahía Blanca. Twenty inches of rain a year marks the western edge of the wheat circle. Westward is the land of little rain, of bunch grass, and low bushes. Here you will find only ranches where the cattle and the wrinkly wool sheep browse among bushes on vast estates.

The railways and the city. The farm

lands of the pampas are threaded with railways in all directions, as is our own Corn Belt. The Argentine railroads focus in Buenos Aires as ours do at Chicago. Buenos Aires is a very large city, with 2,500,000 people in and around it. Only two cities in the Western Hemisphere rival Buenos Aires in size. What are they? Buenos Aires has fine streets, beautiful buildings, theaters, opera houses, clubs, parks, great newspapers, and a tremendous trade. Argentina is not a manufacturing country. There is no good lumber, no coal, no water power, no iron. Therefore she must buy from other countries.

Not having these natural resources to use, what are some of the things Argentina must import?

Argentina imports three fourths of her manufactured goods, but still 600,000 people are busy with leather, silk, cotton, wool, metal furniture, and many other local industries.

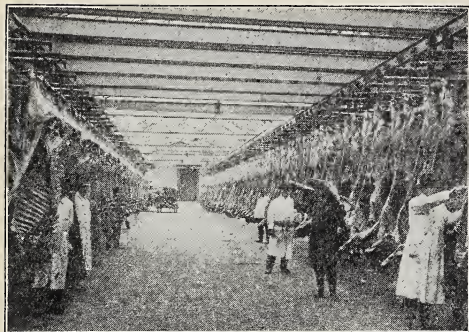


Fig. A. Carcasses of beef in an Argentine cold-storage plant, awaiting shipment to England.



Fig. B. Tell the two chief things which this map shows. How many railroads can you find across South America from east to west? from north to south?

The harbor has room enough to permit 1,500 ships to load and unload at one time. The river near by is shallow, and it takes much dredging to keep the mud out of the channel that men have dug so that ships may enter.

Dairying, fruits, and vegetables. For many years these exporters of corn, wheat,

flaxseed, wool, and meat ate butter and condensed milk which came in cans from Europe. Since 1900 a dairy industry has grown up, and now Argentina supplies itself and exports some butter. The dairy-farm district and the market-garden district are along the shores of the Río de la Plata, not far from the great city. Some islands in the mouth of the Paraná River have frost protection that permits them to have large orchards of apples, peaches, and other fruits.

A "To-Be-Continued" map of places in Argentina. On an outline map of Argentina, place dots and initials to stand for Buenos Aires, Bahía Blanca, Santa Fé, and Rosario.

Conversations. Report a conversation between a *gaucho* and a cattleman who sends chilled meat abroad. Let the class decide whether their talk gives a good word picture. Next, have a farmer from the wheat region join the group and tell about the fine business where he lived on the pampas. Last, an engineer who has built railroads comes; he tells the others about Buenos Aires and why it has become a railroad center. The class members are farmers and merchants; they ask the engineer to send freight cars to carry —. What would the cars and steamers carry away? Make a *complete* story.

Map study. Note the railroads on the map, Figure 402-B. Are there any that cross the continent from east to west? Now study the map (page 362) to find reasons.

Reasons. 1. How can 600,000 people of Argentina manufacture, if there is no coal to run machinery?

2. Why does Argentina trade so much?

3. How did Nature make the pampas one of the finest farm regions of the world?

Reading a graph. A represents wheat production in the United States; B, wheat production in Argentina and Uruguay. If the United States in a recent year produced 900,000,000 bushels, how much did Argentina and Uruguay produce?



THE GENTLEMAN AND THE JOB AND URUGUAY

Who is a gentleman? The Spanish settlers brought across the ocean with them a wrong idea about what a gentleman really is. In the United States and Canada, the people themselves built the railroads. They often borrowed the money from Europe, but they themselves managed the companies and ran the industries. But some Argentineans think that a gentleman ought not to work. Therefore the railroads and the trolley lines, the gas works, and the electric-light plants, and the biggest enterprises in that country are owned by the British, French, German, Dutch, and the United States companies that built them. Most of the skilled men and managers are northern Europeans or North Americans. But Argentina is beginning to get over her foolish idea about what makes a gentleman. She is beginning to be proud of being a nation with modern ways of doing things.

The estate and the family. In Kansas, Iowa, and other parts of the United States, and also in Canada, the good farm land was given away to the early settlers in farms of 160 acres each. Our government wants every man to own the farm he cultivates and the house in which he lives, because it makes him a better citizen.

The kings of Spain liked to favor their friends by giving them land in the colonies. Sometimes a friend of the king would receive a grant of thousands and thousands of acres, as much as a whole county or even several counties in the United States. The Argentine politicians have also given land away to their friends in much the same way as the kings did. The man who owns one of these huge estates (*estancias*) does not want to live on it, nor does he work much for the good of the neighborhood. He may have a summer home on the

estate, but if he can have only one home, he wants that to be in Buenos Aires. He likes to spend much time in Madrid and Paris, and to educate his children in Europe.

In every Spanish-speaking country there are big estates of this kind. Even California, New Mexico, and Texas have them. In the splendid grain and grass lands of Argentina and Uruguay, it sometimes takes the agent two or three days to drive over the estate and visit the various workmen's camps. Some of the agents are now using airplanes in supervising their ranches.

In the grain districts, the land is rented to tenants, most of whom are Italians or other European immigrants. They rent the land for a few crops and then move on to some other place. They live in little houses or shacks with mud walls and roofs of straw or sheets of metal from Pittsburgh or England. The custom of moving from place to place is very bad for the country, because no settler stays long enough to help make a good neighborhood, and no one keeps up the schools or the roads. The roads are so bad that many wagons have wheels eight or ten feet high in order that they may not stick in the mud. Fifteen or twenty horses may have to be hitched to one wagon to haul the grain to the railroad, which may be twenty miles away. In many places there is no road at all. The wagons go anywhere the drivers may choose. Are these people proud of their neighborhoods?

Uruguay. We will study Uruguay right now because it is so much like the Argentine pampa. It is a great grassland, about the size of Oklahoma, with nearly as many people. No other country in South America has a population that is so nearly all white. Only about ten per cent have some Negro or Indian blood. The others are from Spain, and Spanish is the language.

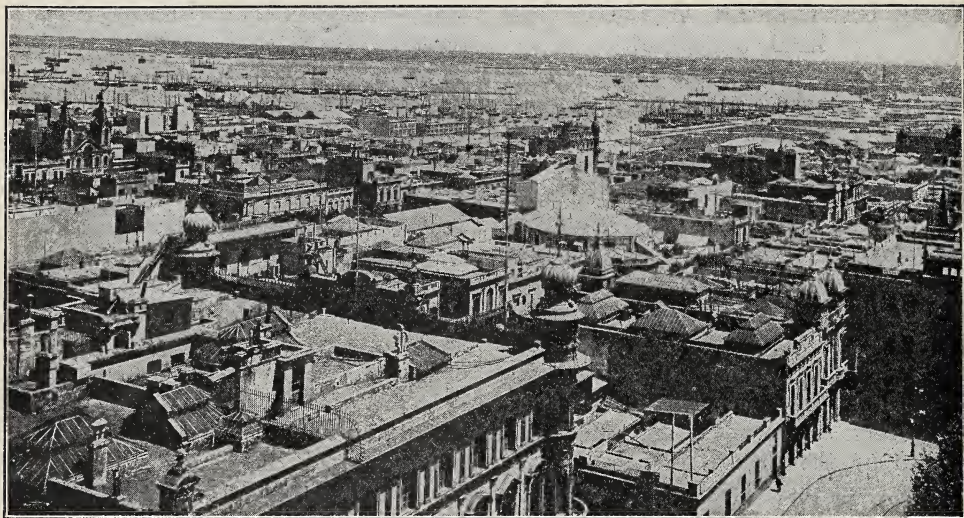


Fig. A. Looking across part of the city of Montevideo, capital of Uruguay, toward the harbor. See the long breakwater built to protect ships from the big waves of the open sea.

Like Argentina, Uruguay is a land of cattle, sheep, and big estates. Cattle and sheep and their products make up nine tenths of the exports, and the industry here has been through all the stages that we found in Argentina. The country is so small that the sheep and cattle walk to their markets at the slaughter houses in the towns along the banks of the Uruguay River and the Rio de la Plata.

There is some farming near Montevideo, and a little wheat and flaxseed are exported, but the Uruguayans prefer to ride about on horseback, make money from sheep and cattle, and keep their big estates. There is not much chance for the Italian farmer to get land even to rent.

Like Argentina, Uruguay has no good supply of lumber, coal, iron, or water power, and promises to continue to be an agricultural country. If the market calls for it, she may export great quantities of grain, and, by growing feed for the sheep and cattle, increase also the amount of meat.

Giving presents. 1. The United States government gave land in the West and North to people who lived upon it.

2. The kings of Spain gave land in South America to their friends.

Give all the reasons why business and neighbors were better in one than in the other.

What do these two land systems have to do with roads?

We and they are different. Copy and fill in this table about Argentina to show the differences:

| | WE | THEY |
|--------------------|----|------|
| Size of farms | | |
| Owners of farms | | |
| Laborers on farms | | |
| Work of farmers | | |
| Work of owners | | |
| Home of farmer | | |
| Home of owner | | |
| Neighborhood pride | | |

Neighbors. Make another outline about Uruguay to show how she compares with Argentina in size, people, exports, distance from markets, fuel, laborers, and farm products.

THE PARANA VALLEY, THE GRAN CHACO, AND PARAGUAY—THE COUNTRY UP THE RIVER

Northeastern Argentina is much larger than the pampas, but not very productive. Why? A part of the answer is given by a row of public vats for dipping cattle to kill ticks. This row of vats belongs to the government, and reaches clear across the country between Santa Fé and Rosario. North of the line of cattle-dipping vats is the land of the cattle tick. All cattle that go south across the line of vats must be dipped to kill the ticks.

The Argentine *Mesopotamia*, as they call the land between the Paraguay and Uruguay rivers, is a good sheep and cattle country at the south, but the northern part is *tick land*, and too hot for sheep. Some rather poor, lean cattle for jerked beef are the chief product of this region.

The Gran Chaco. North of the pampas and west of the Paraná-Paraguay River is the land called the *Gran Chaco*. Argentina has 150,000 square miles of it; Paraguay claims 100,000 square miles; Bolivia claims a lot. It is a very flat plain. In the summer it has heavy rain; then for three months in winter it has none at all. Some of it is forest land; some is pasture land; some is swamp land. Large areas are flooded at the seasons of rain, and the cattle have to hunt for high places to keep from getting drowned. In the western half of the Gran Chaco all the wells are salt, and it is difficult to find fresh water. All of the Gran Chaco is a land of ticks. There are many poisonous snakes and dangerous wild animals. The Indians have been treated so badly by the Spaniards that they are very hostile. Many of them are not influenced in any way by the white man. They still live by *patch-and-thatch* method of farming, or even by hunting.

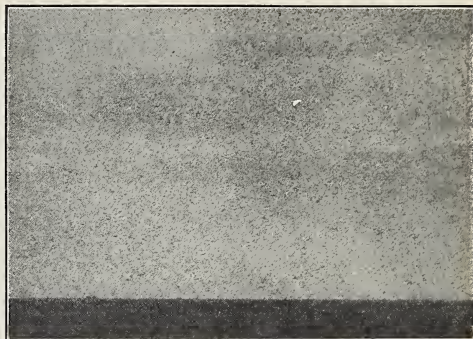


Fig. A. A locust swarm in flight.

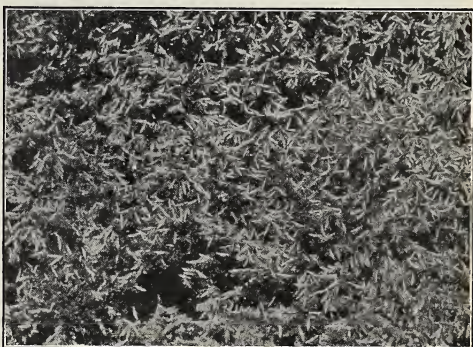


Fig. B. The trunk of a tree covered with locusts.

The locusts. Worst of all for the modern farmer in the Gran Chaco is the locust. If the season is dry, there may suddenly appear, west of the Paraná-Paraguay River, a cloud; and the cloud is locusts flying southward. It is a cloud of adult locusts from the northern chaco. On they go, westward as far as there is good grass-land, eastward into Uruguay, on south to Buenos Aires and beyond. They alight. They lay eggs. In a few weeks the eggs hatch, and millions and millions of young locusts eat almost every green thing, especially man's crops because they are nice and tender and sweet. The locusts may visit some part of the chaco and the pampas almost every year. It is not surprising that you cannot count on good results from farming.

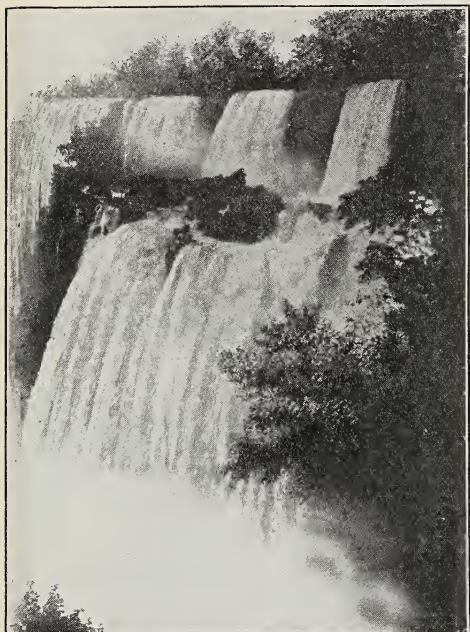


Fig. A. The Iguassú Falls (Fig. 363-A). These falls are formed by a double drop, each having a fall of 180 feet. The American Falls at Niagara are but 162 feet high. What good use might be made of these falls?

Cattle and quebracho. The Gran Chaco is used but little. Some animals are driven in from the west to pasture. On the east, along the Paraná, there is a very valuable timber called *quebracho*. It has tannin in its heartwood. A million tons of it are now being cut each year to make quebracho extract, which is used to tan much of the world's leather.

Cotton. The Argentine government has built a railroad up to the Gran Chaco, and of late years a cotton industry has arisen. Here the government helps settlers to get one-family farms, gives the new settlers seeds, and sends them agricultural teachers, very much as we do in the United States. More than 95 per cent of the present Argentine cotton crop is produced in this region, and it is estimated that about 2,500,000 acres of land are suitable for cotton grow-

ing. This is about 2,000,000 acres more than is now planted. Cotton growing has increased very rapidly of late, and Argentina is beginning to export cotton.

Paraguay. Paraguay is about four times as large as Louisiana. It has less than half as many people, nearly all of whom are Indians or mestizos, and many of them cannot speak Spanish. The country is much like the Gran Chaco. It has a good rainfall, and might produce great quantities of sugar cane, cotton, peanuts, rice, oranges, tobacco, cassava, and many other crops. But, actually, most of it is scrubby forest or cattle ranches, and its chief exports are quebracho extract, meat extract, canned meat, and yerba maté. The jerked-beef industry here, as in the Gran Chaco, has increased. That is the best use to be made of the lean, bony cattle that run half wild in the tick-infested woods and meadows.

Less than one per cent of Paraguay is cultivated, but the people grow a little tobacco and cotton for export. They also send oranges down the river to Buenos Aires, after picking them where they grow wild in the forest.

Yerba maté, or Paraguayan tea, is, as you know, the leaf of a small tree that grows wild in eastern Paraguay and northeastern Argentina and the near-by parts of Brazil. It is carried out of the woods in oxcarts, on mule back, and on man back. The leaves are roasted over the fire, after which they are used as we use tea. The use of yerba maté is increasing, and export to Europe has begun.

Giving reasons. 1. Would you like to live in the Gran Chaco? Give the reasons.

2. How will cotton in Argentina affect the farmers in the United States? Give reasons for your answer.

Opportunity knocks at Paraguay's door. List Paraguay's products. List the products she might have. Why does not Paraguay produce these?



Fig. A. A very small part of the irrigated fruit lands near the Andes in Argentina.

THE ARGENTINE NORTHWEST

What the map tells us. Tell what kind of country is near the oceans in North America and in South America (Fig. 362-A) between latitude 20° and 50° . What can you tell about the rainfall along the Atlantic coast of North America? of South America? along the Pacific coast of each continent? on the mountains? east of the mountains? Study Figure 410-A, and tell the class something about the climate and what the country looks like in western Argentina near the foot of the mountains. Many places in western Argentina are so much like places in southwestern United States that the same species of cactus and other plants grow in both countries.

Find the Argentine towns of Mendoza and San Juan. They lie in valleys at the foot of the high mountains. Does the rainfall map tell you whether or not people irrigate the land?

The Argentine deserts. The northwestern territory of Argentina has 40,000 square miles and 3,300 people.

One place between the pampas and the Andes has only two inches of rainfall a year. Tens of thousands of square miles here are like our own Great Basin in every

respect. This land of scanty bush pasture is browsed by goats and sheep. They spend the summer on highlands, and the winter in valleys where water that runs down from the Andes, its spurs, and the central mountains of Cordoba has let some farmer irrigate a patch of alfalfa for hay.

Argentine fruit. Name the California city that is in about the same latitude as Mendoza. From what you know of California, you will not be surprised to hear of miles and miles of orchards and vineyards, and trainloads of grapes, peaches, plums, and other fruits that go from Mendoza to Buenos Aires, just as they go to Chicago from Los Angeles and the Imperial Valley. Indeed, in the spring, some of these Argentine fruits come to New York and other American cities. Many of them are the very same varieties of fruit that grow in California and Arizona.

Sugar and cattle. North of Mendoza are Tucumán and Jujuy, two more oases in the land of poor pasture. Find places near the eastern and western coasts of North America that have the same latitude. The valleys of Tucumán and Jujuy have great sugar mills and wide stretches of sugar cane to sweeten the Argentine

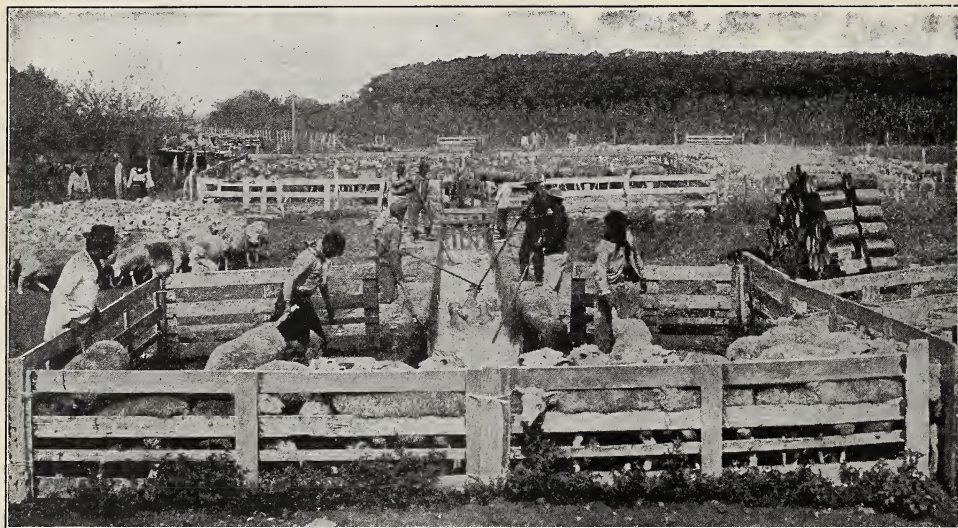


Fig. A. Sheep dipping on an Argentine ranch. Cattle may also be dipped in this way. Tell how dipping is helpful to the sheep and to us. Explain how the dipping of sheep or cattle is like the spraying of trees.

cup of coffee. Near-by valleys are high enough to be too cool for sugar, but corn and alfalfa are grown to fatten cattle from the near-by ranches and from the Gran Chaco. The fat cattle walk to market, far up on the Bolivian plateau, where people are digging for silver and tin, or across the mountains to the deserts of Chile, where miners are digging for copper and nitrate (page 412).

Dots in the bull's-eye. Show by dots and initials in the last ring of the bull's-eye: Mendoza, San Juan, Tucumán, Jujuy. Show these cities also in your to-be-continued map.

Argentina's oasis. 1. What causes her deserts?

2. How do her farmers irrigate?
3. Where can they sell their products?
4. What products have they to sell?
5. How do they send their goods to market?

A race. Divide the class into groups of not more than five pupils each. Let the leader of each group write in a column on a sheet of paper: Mendoza, San Juan, Jujuy, Tucumán. Start each paper down the row, at a signal from the teacher. As each pupil takes the paper, he must write the municipal

product after the name of one city, and pass the paper to the next pupil in his group. Count 10 for speed and 5 for each correct answer.

Places where few people live. Locate the following on the map (Figs. 362-A, 363-A): Ceara, campos, Patagonia, Gran Chaco, tropical forests. Give reasons why you would not like to live in these places.

A products map of South America. Draw a big outline map of South America for your board and a small one for your notebook. On these maps, paste pictures or objects to suggest the products and industries of the eastern countries of South America; as, coffee bean, rubber band, a cocoa label, etc. Show also by little pictures of boats and trains how these products are carried to and fro.

Clothes for travel. Tell what kind of clothes you would take on your journey to Colombia; Guiana; Brazil; Argentina.

Emigrating. Suppose you were going to move to South America to live in a city. Which city would be your first choice for a home? your second choice? your third? Tell why. Do the same if you were to live in the country.

The locust. Tell the story of the Argentine locusts as the Argentine wheat grower might tell it; as the locust might tell it.

THE FALKLAND ISLANDS AND PATAGONIA — LANDS OF THE RIPPING WIND

The Roaring Forties. Sea captains call the oceans in latitude 40° to 50° south the *roaring forties* because the wind blows without ceasing, and it blows so hard as to roar in the rigging of the ships. It roars in your ears so that you can scarcely hear yourself speak. If a man plants a tree on the Falkland Islands, the wind whips and twists it about, and finally pulls it out of the ground. If man plants barley or wheat, the wind blows the grains out of the heads before they get ripe. But grass *can* grow, and long ago the Falkland Islands, which belong to Great Britain, were settled by English, Scotch, and Welsh, who were used to taking care of sheep on treeless, wind-swept hills at home.

Patagonia is the part of Argentina lying south of latitude 38°. Most of it shares the fierce winds of the neighboring seas, and south of Rawson the windy summer is too cool and cloudy to let grain ripen. What do Figures 381-B, 381-C, and 410-A tell about the climate of Patagonia? There is some forest near the Andes, but most of Patagonia is a wind-beaten upland of scattered bushes and wiry grass. Cattle cannot live on this forage, but each square mile of it will keep from sixty to eighty sheep in very good health. Before 1883 there were no white people in the interior of Patagonia, but about that time the British from the Falkland Islands moved over, bought sheep in the pampas, and drove them into Patagonia. Sheep like cool weather. There are now perhaps fifteen million sheep in Patagonia, one third of all those in Argentina. About five thousand Englishmen and Scotchmen with their dogs take care of the sheep.

A traveler says, "The British sheep farmers try to make themselves as com-

fortable as possible inside their homes, almost invariably built under the lee of a hill or bank to escape the relentless winds. Their houses are large, well built, and comfortable, with good furniture, and many possess conservatories full of flowers." The population is less than one to a square mile, and there is small prospect of much increase.

A sheep industry like our own. The Patagonian sheep industry is much like that in western United States. In the drier northern part there are wool breeds of sheep, but in the more humid part, south of latitude 46°, the mutton breeds are kept.

Sheep farmers of southern Patagonia count four great annual events: the first event of the year occurs in March (compare our September), when fat sheep are chosen for market; in April and May comes the dipping season; in October the young lambs are counted, docked (tails off), and marked; in December, when the weather is at its warmest, the heavy work of shearing sheep is begun. This lasts for two months! Men come from Chile and from Buenos Aires to do it, and wool buyers from England visit the ranches.

The fat lambs walk down to the ports, where slaughterhouses and freezing plants prepare them for the European butcher shops. The town of Magallanes has a big sheep show every year, and is the trading base for a wide region having few people.

A sheep map. On a blank map of Argentina, fill in the following: parallels 40 and 50 south; Falkland Islands; Patagonia; Andes Mountains; mutton-sheep ranches; wool-sheep ranches; Tierra del Fuego; Strait of Magellan; Chile; Magallanes.

Add to your "To-be-Continued" map the places mentioned above.

Homesick. English people who live in Patagonia want to go back home. Why?

Making sentences. Use the following in sentences: warm December, Roaring Forties, grain ripens, shearing.



Fig. A. This map shows where Chile and Argentina could be located if each country had the same latitude in North America that it has in South America.

WESTERN COUNTRIES OF SOUTH AMERICA

SOUTHERN AND CENTRAL CHILE

As you study about Chile, get the answer to this question: How does Chile resemble a part of North America?

What the map shows us. In the north-western part of Washington State, Puget Sound lies between the Coast Ranges and the Cascade Mountains. The Coast Range goes on as a big island. Name this island. Now look at Figure 363-A and see how an island in southern Chile does the same thing with the Chilean coast range. What is the latitude of these two islands? Look at your school globe and see that the coasts of British Columbia, southern Alaska, and southern Chile are alike in having high mountains, many deep bays, many mountainous islands offshore.

Land of wet gloom. The ripping west winds (page 409) from the South Pacific bring so much damp air, mist, fog, cloud, rain, sleet, and snow against the southern Andes as to make 600 miles of wet forest along the coast of southern Chile. One place has 215 inches of rainfall every year, while, behind the mountains, a place in Argentine Patagonia has but 9 inches. This Chilean forest of scrubby beech trees

interlaces its branches so closely that you can only travel by walking in the stream beds. If for any reason the Chilean government sends an officer to live there, they have to pay him extra salary. The very few Indians who dwell there live on mushroom, fish, clams, and a few animals that they can catch. They wear skin clothing, and paddle about from beach to beach in open boats. There are a few sawmills and some sheep ranches in valleys sheltered from the wet winds.

Central Chile. From Chiloé to Coquimbo is a stretch of 900 miles called *Central Chile*. This is Spanish Chile, a good land, a very good land. Where would Los Angeles be if moved to Chile (Fig. 410-A)? Portland, Oregon? This Pacific coast of South America bears a most astonishing likeness to the Pacific coast of North America. From Valparaíso to Porto Montt, Chile has the great mountain wall of the Andes to take the place of our Sierra Nevadas and Cascade Mountains, and also a Coast Range like the Coast Ranges of California and Oregon. Between them is the great Chilean valley. It is like the great valley of California (1) in climate; (2) need of irrigation; (3) irrigation water from mountain snow; (4) wide alluvial slopes, with their very rich soil, good to grow crops. Farther south this Chilean valley has more rain and resembles, the Willamette-Puget Sound Valley of Washington State and of Oregon.

An estate in the great valley. Antonio is the black-haired, black-eyed, twelve-year-old son of a *roto*, or Chilean laborer. One of his grandmothers was an Araucanian Indian. His father, mother, and six brothers and sisters live in a one-room house with a dirt floor, walls of sun-dried brick, and a straw roof. Their home is on a ten-thousand-acre estate, fifty miles south of Santiago. The owner lives in

Santiago. This estate has 500 acres of irrigated grapes, 500 acres of wheat, and 200 acres of irrigated alfalfa. The rest is in pasture on the foothills and slopes of the Andes—all except about 100 acres on which the *rotos* grow their food.

Antonio's father, whose work is to drive an ox team, has an acre of ground for his own use. He is allowed to plow it with his master's oxen. He can irrigate one eighth of his acre. The irrigated part is a vegetable garden; the rest is in wheat and beans. The family lives almost entirely on bread and beans.

Antonio has an uncle who works in a nitrate plant a thousand miles to the north in the Atacama Desert (page 412), and another uncle who lives at Mendoza, in Argentina. His big brother spends each summer ten miles from home with a flock of sheep which pasture on the bushy foothills of the Andes. He gets part of his pay in wool, which the mother spins by hand, and then weaves by hand into blankets and ponchos. Ponchos are an important article of their clothing.

None of Antonio's family can read. They get very low wages, and they do not own their home, because Chile is a land of big estates (page 403).

The land like California and the land like Washington. For 400 miles south of Valparaiso, the northern part of the Great Chilean valley has a California climate, with rainy winter, dry summer, bright sunshine, and farms irrigated with snow water, of which the Andes give great store. This is a land of many people. It is a land of grapes, oranges, lemons, figs, peaches, pears, plums, of canneries and the drying of fruit.

The part not in fruit is chiefly in wheat, barley, and beans.

What do the rainfall maps of North America and South America show you



Fig. A. A farming scene in southern Chile. Why would you say that this is a land of plenty of rain?

about the difference in rainfall at 30° and 45° of latitude on the west coasts? At 34° south the Andes begin to have forest from 3,000 feet up to 7,000 feet. At 38° the Chilean valley itself is forested. Farms are to be had by cutting and burning the forest, and the farmers spend their odd time getting out logs for the sawmills.

Near Porto Montt the farmers have a three-year-crop system of wheat, peas, and potatoes, and much of the land has to be drained before they can have a field. Chiloé is too wet for wheat, but oats and potatoes thrive, and some oats are exported.

Explorers. 1. Suppose you went on an exploring trip in Chile about 100 miles north of the Strait of Magellan, tell some of the experiences you would have.

2. Do the same for two weeks near Coquimbo; in the Gran Chaco; the campos.

Mind pictures. Shut your eyes and think about the different Chilean things or scenes. Who will make the longest list of these pictures of the mind?

Tell a story. Tell a story that Antonio's big brother might tell when he came home in the autumn.

Models. Make with sand or clay, or flour and salt, models of the great valleys of Chile and of California. Tell how they are like each other.

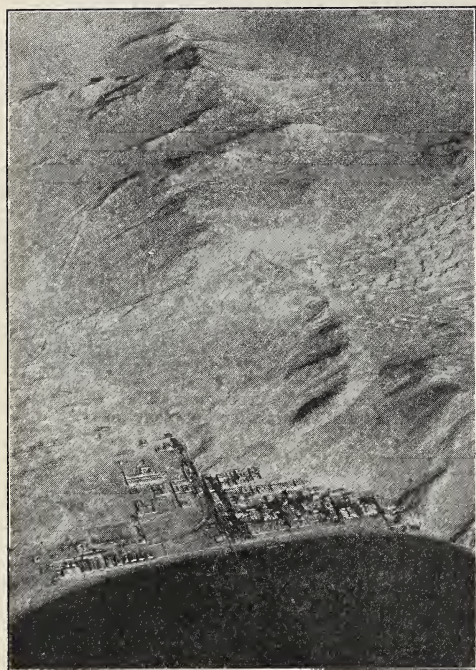


Fig. A. You are flying very high in an airplane and looking down on the desert coast of Chile and Peru. The Pacific Ocean is at the bottom of the picture, then a small town, and then the dry waste.

NORTHERN CHILE

A land without rain. Chico is an Indian boy whose father works in a nitrate plant in the Atacama Desert, about thirty miles from the port of Antofagasta. Chico has seen but one rain in all of his life. That was a little sprinkle five years ago. There was not enough of it to wet his clothes. The climate is so dry that no crop can ever grow. Chico never saw a tree. In 1880 the armies of Chile and Peru fought a battle in this desert, and for years afterward the dried bodies of dead men and dead horses were to be seen lying where they fell in the desert. This fact shows how very dry indeed this part of the world is.

We all know that salt will quickly dissolve in water, but here in this desert of

Peru and Chile, and in a part of Bolivia near by, and even in northwestern Argentina, the salt just lies on the ground, shining like snow. This is because there is no rain water to carry it away.

All day long on this salt plain, Chico's father shovels into a cart a kind of salt called *nitrate*. The driver hauls it over to the huge nitrate factory. There is no garden, no tree, no grass around the little stone house where Chico lives. When he gets a bucket of water for his mother, he has to buy it because water is so scarce. All the water in this desert village is brought in a pipe from a stream at the foot of a snow field high up in the Andes, nearly one hundred miles away.

The trade of the wet land with the dry land. Every two days a train comes from Antofagasta bringing potatoes, cabbages, apples, and all kinds of food for the people at the nitrate works, and bales of hay and sacks of grain for the horses and mules.

But Antofagasta is almost as dry as the nitrate works. All the food which Antofagasta ships inland, and all the food which the people have at Antofagasta, comes in ships from central Chile.

Find a place on the west coast of North America that is the same distance from the Equator that Antofagasta is. Tell about the climate there.

Chile exports some wool and meat to Europe, but the farmers of central and southern Chile get most of their money by selling food to the miners in the desert to the north. In these deserts many thousands of people live in towns and villages as dry and foodless as is Chico's village.

Some of the people work in copper mines. Nitrate and copper make up most of Chile's exports. There is one large iron mine in northern Chile that sends nearly two million tons of ore to Baltimore and New York each year.

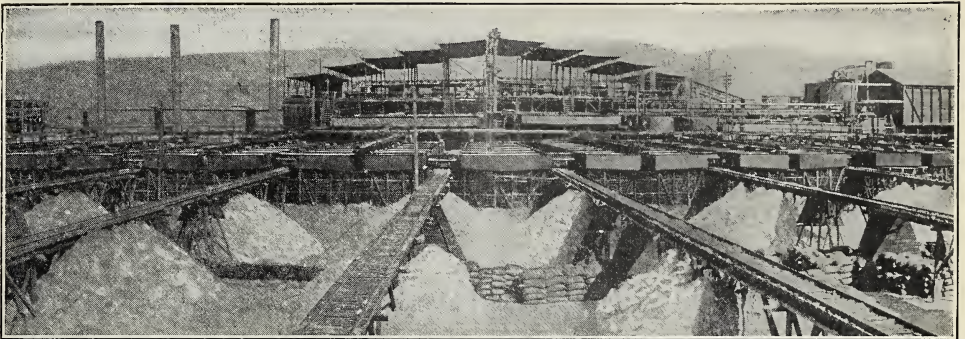


Fig. A. This large plant on the dry northern plain of Chile prepares Chile salt-peter (nitrate of soda) for market. The white piles are nitrate of soda.

Increasing our food supply. Each year hundreds of ships loaded with nitrate sail away from Antofagasta, Iquique, and other ports of northern Chile to Europe, Japan, and the United States. We use nitrate to make dynamite for blasting rocks in mines, quarries, and roads. Many chemical factories use nitrate to make things which we find in the drug store, and the farmers also use it as fertilizer to feed the crops. Shiploads of nitrate go to many ports in the United States where there are fertilizer factories.

Nitrate of soda looks like very coarse salt. If you want cabbage or lettuce to grow rapidly, scatter a thimbleful of nitrate on the damp ground near the roots of the plant. Be careful that it does not touch the stem or leaves. The use of nitrate as a fertilizer is one of the many ways by which educated men have recently learned how to make the earth give us much more food. If we are willing to work and can live without wars, there is no reason why anyone should go hungry.

New inventions and hard times. The new nitrate factories of the United States and of Europe are getting nitrogen from the air more cheaply than the rotos can get it from the deserts of Chile. This puts the rotos out of work. It also

destroys the market for the farmers of Chile. In 1931 the Chilean government could not pay the interest on its debts.

Probably the Chileans will do more manufacturing. They already have many small factories in Santiago, Valparaiso, Concepción, and Valdivia. They have some coal and much water power from many mountain streams. They have a good climate, with no tropical diseases. Name some raw materials that they have. The people are energetic. They are a mixture of Spanish, Italian, German, Dutch, and Araucanian Indians. These Indians held their country in south central Chile against the Spaniards for two hundred years. They are the most energetic Indians in all South America.

Some business geography. Explain: 1. An American in New York who sold farm machinery to central Chile was complaining because nitrate plants in Virginia and Norway had hurt his business.

2. Three-sided trade. Here are the sides: central Chile, northern Chile, the United States. Make a list of articles for each of the three sides of this trade.

3. A man in Santiago says, "The nitrate business is bad. I think we had better start a factory." What kind of factory do you think he should start?

4. The very best resources Chile has for manufacturing are —.

5. What are the Andes worth to Chile?

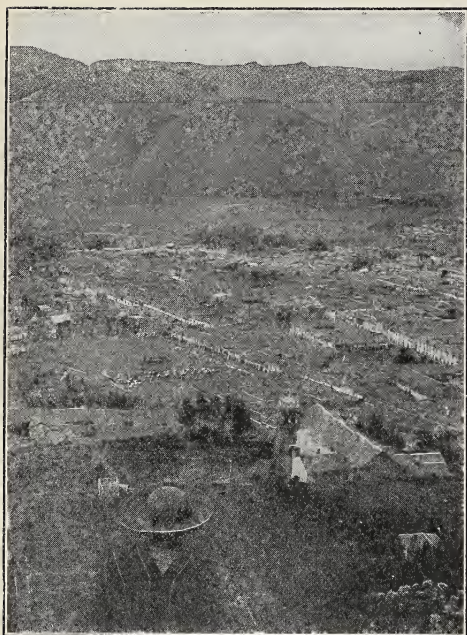


Fig. A. Cuzco, capital of the Inca empire, as seen today from one of the old forts of the Inca.

PERU, ECUADOR, AND BOLIVIA

THINGS IN COMMON AND THE PACIFIC COAST PLAIN

What the map tells you. Look at the map (Fig. 362-A, 363-A) and answer this question: Is any one of these three countries alike all over? As you read these pages, see if you can think of other countries that have greater differences in surface and conditions. We have already read something about their eastern sections (pages 365, 389, 390, 391 and 405).

Things in common. These three countries are alike in that most of the people are Indians and mestizos, with a smaller group of Spaniards who manage the country. Most of the land is in large estates, which the Spaniards took away from the Indians when they conquered the Incas soon after the time of Columbus.

When the conquering Spaniards climbed the Andean plateau, they found the city

of Cuzco, the ancient capital of a populous Indian empire that had long been ruled by the Inca kings. In the Inca empire there were splendid roads running for hundreds of miles across the plateaus and along the sides of the mountains. The industrious people had built large buildings with stone walls of astonishing workmanship.

As there were many people to feed, they had to use mountain sides. Stone-walled terraces turned these mountain sides into little step farms that stretched one above the other to dizzy heights, and every possible patch of land was cultivated. They had an irrigation system that was as wonderful as their roads, walls, and terraces. The empire stretched down to the seashore. Laws protected the guano-producing waterfowl that had their colonies on the desert islands near the Pacific coast. The laws of the Incas, if gathered together, would fill many books. The ruling race was an intelligent and highly civilized people.

This empire reached from the Araucanian country of south central Chile, latitude 37°, all the way along the Andes to northern Ecuador. It occupied the plateau and the dry coast plain, but nowhere did it enter the tropic forest.

The Spaniards, with their guns, conquered the Incas, robbed them, and carried off bars of gold and silver worth more than twenty million dollars. That was the largest amount of money ever seen in the world up to that time. More adventurers came from Spain, enslaved the plateau peoples, and made them dig the gold and silver out of their own mines. It was the cruel treatment of the Spanish taskmaster that so reduced the people that there were less than six millions in 1930, where there had been fifteen millions in 1530.

The coast plain in Peru. Between the mountains and the sea is a true desert,

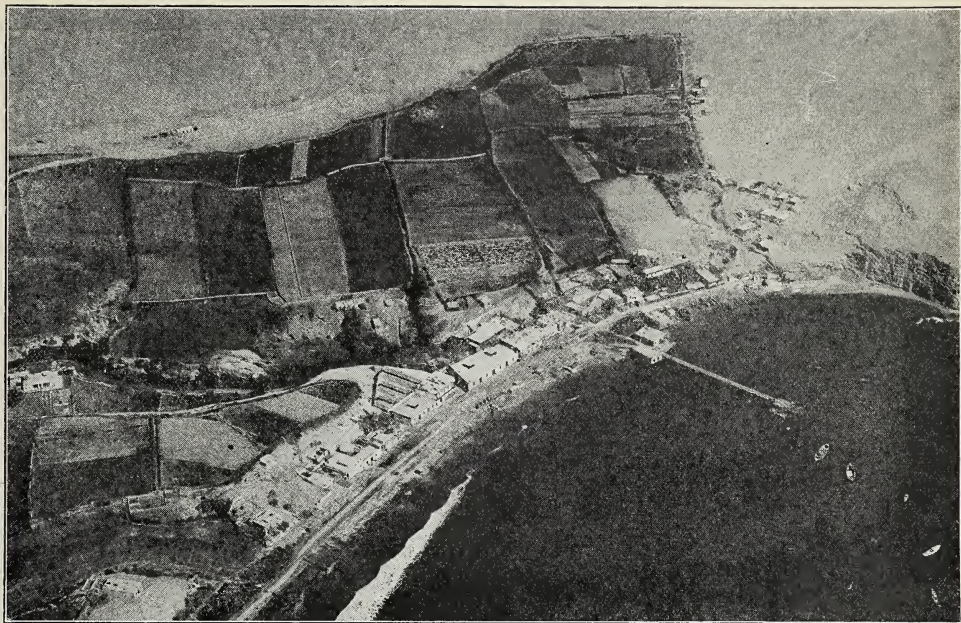


Fig. A. Once again our plane is flying toward the dry coast of western Peru. But this spot has water from the mountain streams and grows sugar cane and the good Peruvian cotton. See the irrigated fields. See the sharp line where irrigated fields end and bare desert begins. Be sure to compare with Figure 364-A.

1,400 miles long, and in a few places 80 miles wide. For years at a time there is no rain whatever. The ground is perfectly bare of plant growth. It is only drifting sand, bare clay, and blinding, blowing dust. Yet this rainless coast produces three of the four chief exports of Peru, and is the home of one third of the population, including most of the 600,000 white people. This happens because fifty-two rivers, fed by melting snow and glaciers on the high Andes, flow down the western slopes and cross the plain. Irrigation turns every river valley into an oasis. Like the plateau, they had far more people when Columbus came than they do now.

Crops all the time. The climate is warm all the year. The Indian or mestizo or Chinese farmer can plant whenever he chooses. He can grow three crops of corn a year, or four crops of vegetables. These

people produce a great variety of supply crops, and two great crops for export: sugar and cotton. Their sugar fields yield more an acre than the sugar fields of Cuba, and the cotton is of unusual quality. Some of it is brown and crinkly, mixing well with wool. Another variety is long and straight, used for making automobile tires. The cotton plants here live four or five years. They are chopped after each crop and a new top grows from the old root.

You can stand on the bare, dusty, glaring upland and look down into a valley rich and green with crops and shade trees, and see the glistening water in the streams and irrigation canals that water it all. This little oasis settlement, backed by the mountain, walled by the desert, faces outward to the sea. No one goes over the hills from valley to valley. It is too much trouble to make a desert road. They



Fig. A. This is Callao, the port of Lima, Peru. See the long breakwater which protects ships from the open sea waves. See the man-made dock in which some ships are loading or unloading their cargoes.

travel instead by the sea, which is the main highway of Peru — the only through highway of Peru. There are thirty ports, but only at Callao can a ship tie up to a wharf. At every other port people must go out to the ship which anchors in the sea.

The oases on the fifty-two rivers have only about 650,000 acres in cultivation. This is but one five-hundredth part of all Peru, and engineers think the irrigated area cannot be increased very much more.

Near the western point of Peru is an oil field, where foreign capitalists run an industry that furnishes fuel for the many little railroads that connect the ports and oases. Petroleum is Peru's chief export.

The low plain of Ecuador. The climate of the Pacific coast plain of South America changes near the northern boundary of Peru. Rains begin. Cactus may be seen. Then, as one goes north, the rains increase

and grass appears. Still farther north one sees grass with scattered trees (savannah), and, finally, the tropic forest, which covers the coast lands from the Gulf of Guayaquil to Panama (page 378). This forested plain gives Ecuador important exports: cacao (page 384), and ivory nuts for buttons. From the mountain valleys comes coffee.

Learning by comparison. 1. You know that the coastal plain and mountains of northern Ecuador are much like those of Colombia. Therefore, what can you tell about the Ecuadorean coffee industry? the palm-nut industry?

2. You know that Ecuador grows cacao. What does that tell you about the climate and appearance of the country?

The past. 1. Pretend you are an educated Indian from the Andean plateau, and tell the story of your people. Tell about the present too.

2. Why do you think the Inca empire did not extend into the tropic forest?

THE ANDEAN PLATEAU

The Andes Mountains stand at the eastern edge of the Pacific coast plain of South America. They are a mountain wall, if there is one anywhere. There is no other such long, unbroken pile of stone in the world. For two thousand miles south of Ecuador it stands, a barrier of almost naked rock without plant growth. To climb it has always been hard work for the pack mule, but man has at last built his railroads up the mountain wall. From what ports do they go (Fig. 402-B)? How many lines are there? The one that goes up past Lima reaches its highest pass 106 miles from the ocean. It is 15,665 feet high, higher than any mountain peak in the United States. This short road has 65 tunnels, 67 bridges, and 16 switchbacks to help it climb this wall-like mountain.

The Indian's pack train. At plateau stations on these railroads a traveler may see the plateau Indian, with his llamas or his pack mules. His animals are burdened with wool, sheepskins, cowhides, valuable ores, and even with rubber secured in trade from some lowland tribe to the eastward. This Indian may have come two hundred miles, sleeping at night by the campfire. The animals pick their living by browsing wayside herbage. At night the Indians hobble their beasts by tying their feet with a soft rope of llama wool, so that they can walk only a little as they hunt their food. After an absence of weeks or even of months, the Indian gets back to his distant village with a year's supply of white men's factory-made goods.

A wide plateau. How wide is the plateau between the high ranges of the eastern and western Andes in Peru? in Bolivia? Lake Titicaca, 12,500 feet above the sea, is 138 miles long, and a river 185 miles long carries its water to Lake Poopó, which is 40 miles long.



Fig. A. In the western countries of South America, especially Bolivia and Peru, the llama is the principal beast of burden. This herd of llamas is carrying supplies to a mine in the Asend.



Fig. B. A descendant of the Incas, poling his boat on Lake Titicaca. Reed boat, reed sail, no wind.



Fig. A. The city of La Paz, Bolivia. Mount Illimani, in the far distance, is over 21,000 feet high. Find it on Figure 362-A. Compare with Mount Misti (Fig. 365-A). Do you see any trees? If not, why?

Climate and life on the high plateau. This plateau is not a pleasant place in which to live, because it has such a very high elevation. La Paz is 12,000 feet above the sea, and Potosi is 13,600 feet. There is less air on this plateau than in our country, for one third of the earth's air lies below 11,000 feet. The air above that level has less oxygen in it, and therefore it is hard to breathe in it.

The traveler from Europe or North America who goes to these mountain places nearly always has *soroche*, or mountain sickness. His head thumps, he becomes dizzy, and he suffers in many ways.

The plateau is very dry because the high Andes stand like walls around it and keep out moisture. The southern part, in northern Argentina, northern Chile, and southern Bolivia, is so very dry that it has large areas of salt-covered plains called *salars*. The plateau air cools off very quickly because it is dry as well as thin. As on the tops of high mountains, the sun on this plateau burns you by day like tropic heat. By night, the high, thin air cools off quickly and you are almost as cold as in the Arctic.

Potatoes. This high, cold plateau

seems to be the native home of the potato, a crop we got from South America. It was an important food in the days of the Inca; it is important now. The Indians freeze potatoes, thaw them, and dry them. After this they keep as grain keeps. They also grow and eat two other tubers, called *oca* and *ulloca*, and a kind of grain called *quinua*. We did not borrow these three crops. The little brown quinua seeds make a bread that is very nutritious and keeps a long time. Mule drivers and shepherds of the plateau eat it as they travel.

High up, beyond any agriculture, are the sheep and llama pastures, which extend to the snow line. Near Antabamba, Peru, at an elevation of 17,100 feet, much higher than any summit in the Rockies, is a stone hut with a grass roof, the highest known human habitation in the Western Hemisphere.

The plateau shepherds. Most of the plateau is so cold that the wind bites almost to the bone. Sometimes the people wear wool masks over their faces. It is so dry here that scanty pasture is produced. Therefore it is scantily peopled by shepherds, except near mines and irrigated

spots. The Indian shepherd lets no grass escape him. An American geographer, Doctor Bowman, says: "It is a constant marvel to one in the mountains to see to what altitudes the shepherd climbs and what out-of-the-way places he reaches. He is the characteristic element in the Andean scene — bleak slopes in some high valley, a widely scattered flock of llamas, a solitary shepherd whistling and clucking to his vagrant flock, turning them to right or left by throwing stones, and industriously spinning the llama wool into yarn as he trots along, often without food save the leaves of the coca, and without water for a day or more at a time, far from any shelter, alone."

Metals. The plateau Indian furnishes some export of wool and hides, but metals are the chief export of the plateau, and have been for the last four hundred years. The great mountain of Potosi alone has produced in that time three billion dollars' worth of silver.

Tin from near Lake Titicaca is the chief export of Bolivia. At present, Europeans and Americans plan and manage the mines, but most of the work is done by the Indians, who work for low wages and live in great poverty.

La Paz, the capital of Bolivia, is a mining center in a place where food is scarce. Every day hundreds of mule trains toil over the bare plateau bringing potatoes and barley. Other pack trains bring bananas and fresh vegetables up the long stony trails from the warmer eastern valleys, to feed the hundred fifty thousand people who live in La Paz.

One of the greatest mines in the world is the copper mine of Cerro de Pasco, 14,300 feet above the sea. In 1630 an Indian shepherd happened to spy a lump of silver there in the ashes of his campfire. He began to dig the precious metal.

Others came, found copper, and a city grew. Engineers now know that there are two thousand veins of ore containing copper, gold, and silver. Men have dug here for three centuries, but there is still an immense amount of ore in the ground. An American company has great smelters and employs thousands of Indian workmen. The best machinery is used, because the railroad can bring it in. Copper is the chief export of the Peruvian plateau.

The plateau of Ecuador is only thirty to forty miles wide, but into this little strip are crowded three fourths of all the people in Ecuador—more than live in Montana, Idaho, and Wyoming.

They boast that Quito has the climate of eternal spring, but it is rather chilly spring because Quito is nearly two miles above the sea. Since Quito is only seventeen miles from the Equator, the months are all alike. Every night the temperature goes down to 50° or below, which for us is overcoat weather.

These people are nearly all farmers, very skilful farmers, carrying on the skill of Inca days. They grow corn, wheat, barley, quinoa, potatoes, and ulloca, and many beans. They buy so little that the railroad, that was built with great labor from Guayaquil by an American company, is not making any money.

Something to tell. 1. Our debt to the Andean Plateau.

2. The story of
 - a. an Andean locomotive engineer.
 - b. two Andean mule drivers.
 - c. Andean shepherd.
 - d. Andean farmer.
 - e. Andean mining engineer.
 - f. Andean mine worker.

g. How they got a steamboat on Lake Titicaca before there was any railroad to the lake (page 417), and how they got a piano to Quito before there was a railroad up the Andes.

Make a model. Make a model or a drawing of the high Andes, and put on the crops at the different elevations.

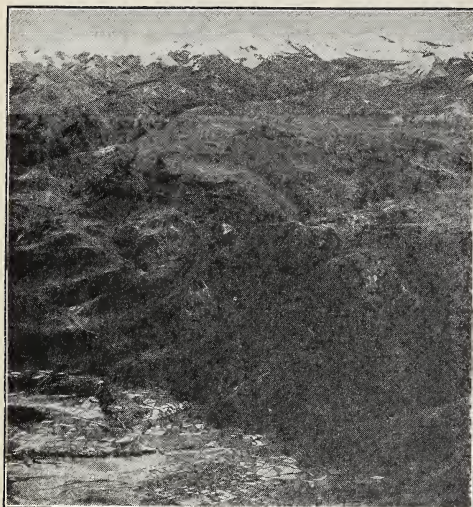


Fig. A. The Andean mountain wall in Peru. See snow, irrigation, and terraced fields.

THE MONTANA

A land that is hard to reach. What proportion of Ecuador, Peru, and Bolivia lies east of the Andes? A part of south-eastern Bolivia is in the Gran Chaco (page 405). Another part is in the grasslands of which we read when studying about Brazil, (page 380), but much tangled forest reaches up the Andean slopes from 15° south latitude to 3° north.

On page 374 we read about some coffee plantations nestled in the valleys of the eastern Andes of Colombia. There are many of these little valleys, scores of them, hundreds of them, mostly unused by man, in the 1,500 miles of forested mountain slopes in eastern Ecuador, eastern Peru, and northeastern Bolivia. Tell why it is hard to get to these valleys. They have fine climate for growing corn, cassava, bananas, sugar, coffee, cacao. Some of these things are grown in the valleys that are near the mining settlements of the plateau. Many an Indian and many a mule spend their days climbing up and down the zigzag, muddy, stony

trails, carrying these tropic foods to the mine workers on the cold plateau.

The automobile road. In several thousand miles there is only one automobile road down the east slope of the Andes. It connects the plateau with the airplane service up from Iquitos (page 364). This road is so narrow that automobiles are allowed to go down one day and back the next, and there are plenty of chances to topple into a roaring river from cliffs a hundred or even a thousand feet high.

REVIEW OF SOUTH AMERICA

The free-hand map. Open your book and either trace or copy the outline of South America and the boundaries of the countries. Shut the book and put in the names of the countries. Put in five rivers, three plateaus, and a lot of important cities, with names. If you need room, you can write the name of the city in the ocean and draw a line to the dot that shows the location of the city. The winner is the one who gets the most things located correctly.

Trade. Make a list of the things that the United States should sell to South America. Tell why we should sell these things. Now the people of South America cannot buy unless they sell something to pay for it, so make out a list of the things that we should buy from South America, and tell why we should buy them.

Likenesses. Hang up the maps of North America and South America. Point out places in each of the continents that are alike. Tell what kind of place each is.

Differences. Tell about as many different kinds of wheat industry in South America as you can; cattle industry; sheep industry; mining industry.

The finger picture game. Put up the wall map of South America. If the school does not have one, the class can make one on a big sheet of paper. Divide the class into two teams. Let a member from team A go to the map and point with finger or pointer to a place on the map. A member of team B must tell something important about that place. This can be done in fifty or even a hundred places. Keep score.

Travel. Tell about the clothes I will take, and why I take them, for my journey to Peru; Chile; Guiana; Brazil.



Fig. A. Home industries in Grandmother's time: (1) carding wool; (2) spinning wool; (3) weaving.

OUR NEW WORLD AND THE PLACE OF THE UNITED STATES IN IT

OUR NEW MACHINES AND OUR NEW NEIGHBORS

☞ Why do we call the present-day world in which we are living *a new world*?

The small neighborhood. I have one blanket that is not like any other blanket in my house. I can see plainly that it is made of yarn threads, and that it has on it the initials of my grandmother's name before she was married. The sheep that furnished the wool for that blanket lived on her father's farm on the hills of Maryland. My grandmother washed and carded the wool, spun it into yarn, wove the yarn into a blanket, and cross-stitched the initials of her name on one end of the blanket. I prize this blanket highly. It was one of many things that my grandmother made for her chest of household supplies.

After the wedding in 1831 she and her young farmer husband started to their new home. They traveled at five miles an hour in a carriage drawn by a horse that had grown up on the bridegroom's farm. The carriage had been made in the neighborhood by the local carriage maker, or *wheelwright*, as he was sometimes called. The wheelwright and the blacksmith often had shops side by side

with an open door between. These two men working together made wagons and carriages. One did the woodwork, using wood from the woodlots on the near-by farms; the other did the ironwork, using iron from a little blast furnace a few miles distant. In those days a small neighborhood supplied nearly all of the needs of the people who lived in it.

The very large neighborhood. I have an automobile. Look at Figure 425-A and then see how much territory it takes to furnish materials for an automobile, and compare that with the amount of territory it took to furnish the parts for my grandfather's carriage.

You will find this same increase of our need of distant places if you compare the food of my grandfather's time and that of today, or the clothes, the materials for a house, a book — almost anything. Why has this great change come about? One word gives the answer: *machines* — machines to make things, machines to carry things. We learned something about this on page 106.

A ton mile. To see how machinery has made distant peoples help us, let us consider two words: *a ton mile*.

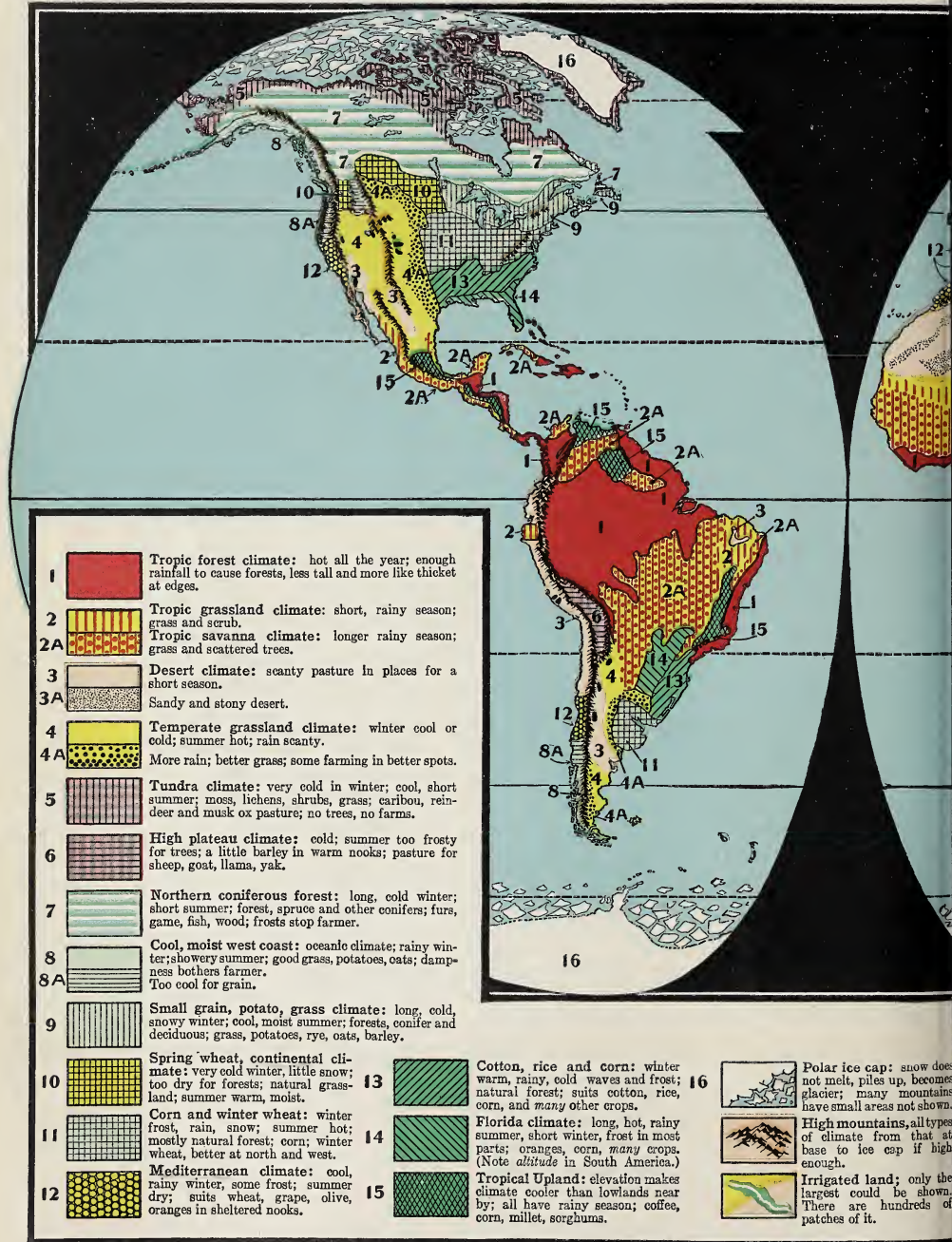
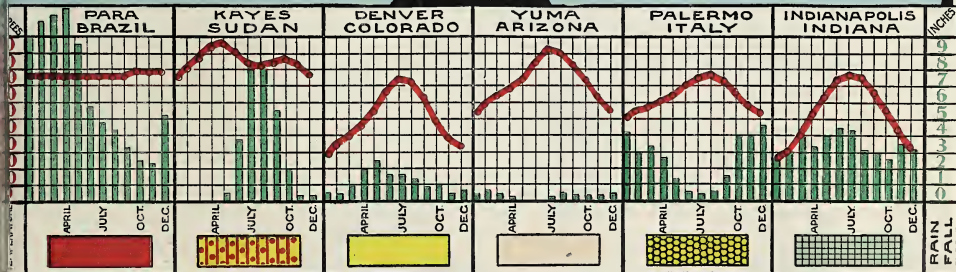
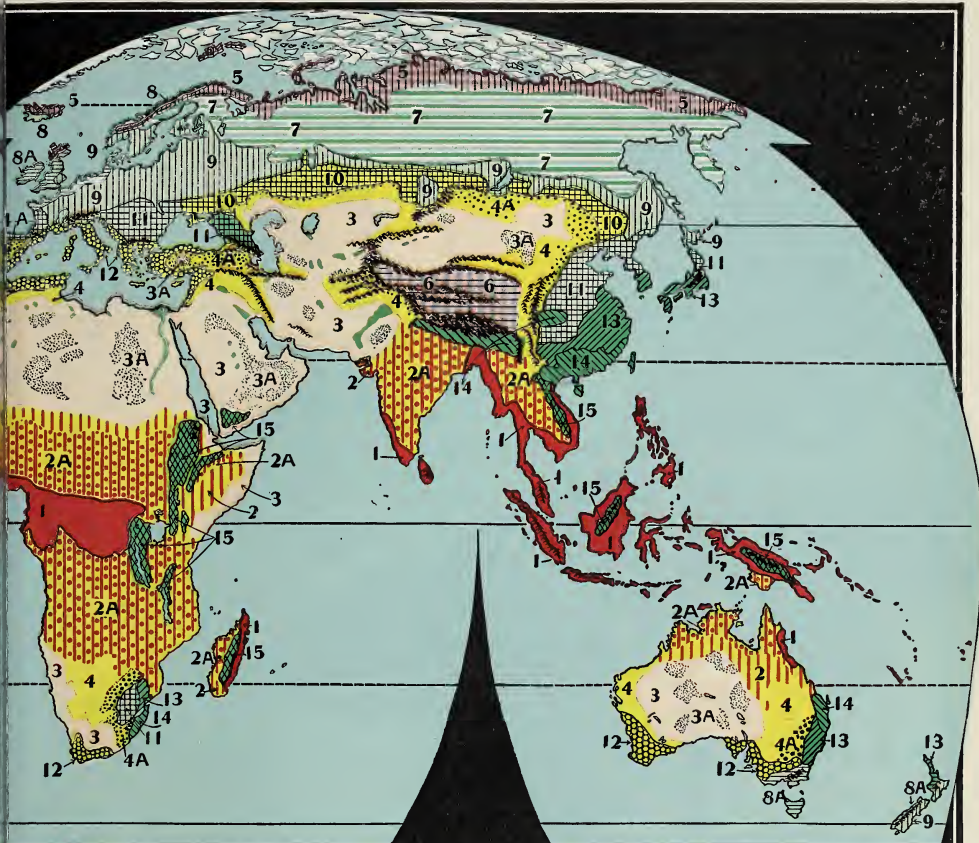


Fig. A. This map shows in a general



You will find this map of climatic regions very useful in the study of geography. You may say that it gives you geographic yardsticks with which to measure the world. For example, take the region marked 12. When you have studied one of them fully (probably California), you will know a great deal about each of the other five regions having the California (Mediterranean) type of climate. When you become familiar with the climate and occupations of one region, you know how man can use the earth in similar regions.

The six graphs in the lower right corner of the map may be called *pictures of climates*. The columns show the *average* amount of rainfall for each month at a particular place. See figures at right. Indianapolis has three and a quarter inches of rain in December. How much does Para have?

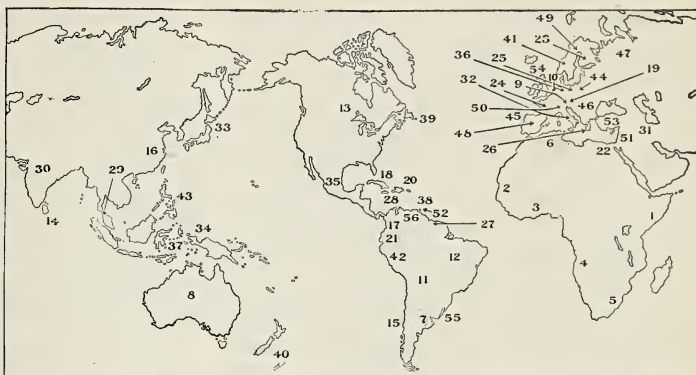
The curved line crossing the graph shows the *average* temperature for each month. See figures at left. Para has a January temperature of 76°F. What has Indianapolis?



Fig. A. On this map of the continents the areas served by railroads are shown by white lines fifteen miles wide. In some localities the railroads are so close together that the area is white. (These maps are used by courtesy of Mark Jefferson and are copyrighted by him.)

Key Country | Product

| | |
|------------------------|-----------------|
| 1. British East Africa | Sisal |
| 2. British West Africa | Skins |
| 3. Gold Coast | Manganese |
| 4. Portuguese Africa | Chrome |
| 5. South Africa | Copper |
| 6. Algeria | Cork |
| 7. Argentina | Antimony |
| 8. Australia | Wool |
| 9. Austria | Magnesite |
| 10. Belgium | Creosote |
| 11. Bolivia | Tin Ore |
| 12. Brazil | Manganese |
| 13. Canada | Abrasives |
| 14. Ceylon | Lead |
| 15. Chile | Lead Ore |
| 16. China | Nutgalls |
| 17. Colombia | Platinum |
| 18. Cuba | Glycerine |
| 19. Czechoslovakia | Leather |
| 20. Dominican Republic | Sugar Cane |
| 21. Ecuador | Petroleum |
| 22. Egypt | Cotton |
| 23. Finland | Paper Base |
| 24. France | Ochers |
| 25. Germany | Babbit |
| 26. Greece | Chromite |
| 27. Guiana | Bauxite |
| 28. Haiti | Dyeing Extracts |
| 29. Malay Peninsula | Tin |
| 30. India | Mica |
| 31. Iraq | Mohair |
| 32. Italy | Onyx |
| 33. Japan | Moss |
| 34. Malaya | Damar |
| 35. Mexico | Mahogany |
| 36. Netherlands | Diamonds |
| 37. Netherland India | Kapok |
| 38. West Indies | Oil |



Map by courtesy National Automobile Chamber of Commerce

| Key Country | Product | Key Country | Product |
|-------------------|------------------|--------------------|-----------|
| 39. Newfoundland | Lead | 48. Spain | Mercury |
| 40. New Zealand | Wool | 49. Sweden | Kipskins |
| 41. Norway | Nickel | 50. Switzerland | Aluminum |
| 42. Peru | Lead | 51. Syria | Mohair |
| 43. Philippines | Mangrove Extract | 52. Trinidad | Asphalt |
| 44. Poland | Zinc | 53. Turkey | Valonia |
| 45. Portugal | Cork | 54. United Kingdom | Clay |
| 46. Rumania | Petroleum | 55. Uruguay | Hides |
| 47. Soviet Russia | Manganese | 56. Venezuela | Petroleum |

Fig. A. This map shows that at least 56 foreign countries provide us with materials which we use in the manufacture of automobiles. Only one product is indicated from each country, although as many as 39 automotive products come to us from some foreign countries.

A *ton mile* means a ton of freight carried one mile. Find the cost of a ton mile, in hours of man labor, for the African carrier who carries 100 pounds on his head 20 miles in one day. Find the cost for the farm wagon, with a man and two horses, carrying 3000 pounds 20 miles in a day; for the truck with which one man carries five tons 150 miles in a day; for the coal train of 50 cars, carrying 100,000 pounds each, and a crew of five men, going 100 miles in a day.

The railroad. You can see that the railroad still has a great advantage for carrying large quantities of freight over long distances, but the quick-moving truck, automobile, and bus have taken much short-distance freight and passenger traffic away from the railroads and street-car lines.

The maps (Fig. 424-A) show that, after all, man has built railroads on only a very small part of the earth's surface.

Transport by means of animals. Railroads, automobiles, trucks, and tractors are wonderful machines, but our old, old friends, the beasts of burden, still work in every continent, in every country, and in every state.

Animals furnish the power on more than half of the farms of the United States and the Southern Hemisphere, most of those of Europe, and the larger farms of Asia. Only a small proportion of the farms in America and Europe are fully motorized. Even in the United States the horse still competes with the truck in carrying produce from the farm to the railroad station. The animal caravans of Asia and Africa still make long journeys over the roadless, sparsely peopled, arid, or mountainous lands. In the Andes, the Rockies, the Himalayas, and nearly all other inhabited mountain regions, trains of pack mules or horses or donkeys or oxen or llamas or yaks or goats still do service.

Transport by sea. Man has improved his powers of carrying things by sea as much as he has improved his powers of carrying by land. For a very long time man had only rafts and rowboats. Then came boats with sails—not very good ones, to be sure, but sails were better than oars. Then someone invented the compass, so that man might tell even on a cloudy day in what direction he was sailing across the sea. With the compass the sailor did not have to follow the coast and sail from headland to headland. He could sail boldly out of sight of land. A modern sailor would think the sailing ship of five hundred years ago was a very poor thing. Until near the time of Columbus the sailing vessel was such an awkward thing that it could sail only with the wind behind the ship. Therefore if the sailor set out from Europe into the western ocean he was not sure he could ever get back. Then someone invented a boat that could tack and sail into the wind. This brought the age of the great explorers. With a ship that tacked, Columbus could sail west and feel certain that he could come back from the unknown lands.

At last came the steamship, whose ton miles cost much less than those of the best freight train.

The free sea. A railroad has to be built; the sea is free to everyone. All the ship captain needs is a map showing where the shores, islands, rocks, and reefs are located, and lighthouses at dangerous points.

Tramp or charter traffic. If you have enough freight to fill a ship, you can hire (charter) a ship to take your freight across the sea, just as on land a shipper can ship a carload of goods by railway or by truckload on a highway. Since these ships go anywhere, they are often called *tramps*. Let us follow such a ship.

She is built at Newcastle, England. Her first cargo is coal to Buenos Aires; then wheat to Liverpool; then steel rails and locomotives to Rio de Janeiro; coffee to New Orleans; cotton to Kobe; coal to Manila; sugar to Seattle; lumber to Soerabaja, Java; sugar to Bombay; wheat to Anvers; then back to her home port in ballast. Ballast is some worthless weight put into a ship to hold her down so that she will ride safely.

There are many hundreds of such tramp ships working their ways around the world. There are many hundreds of shipping agents in several hundred ports whose business it is to help these vessels find cargo and to look after them when the ships are in port. Tramp steamers nearly always haul raw materials: grain, coal, lumber, pulp wood, wood pulp, cotton, jute, ore, phosphate rock, nitrate, potash, salt, building stone. Some countries pay for many of their imports by the earnings of shipping. Norway has 1.44 tons of shipping for each person; United Kingdom 0.44 tons; the Netherlands 0.39 tons. The United States has but 0.11 tons.

Ocean-line traffic. The single shipper of typewriters, books, drugs, automobiles, machine tools, and a thousand other manufactures cannot hope to load a ship. Such traffic goes by *line steamers*. Many companies advertise that their line ships will sail on given dates from certain ports to certain other ports and that the liners will carry all suitable freight for all shippers. Find the advertisements in newspapers of any large seaport city.

The greatest line traffic is that between northeastern United States and northwestern Europe. There are dozens of lines from New York, Boston, Montreal, Philadelphia, Baltimore, and Norfolk, and there are also dozens of lines reaching Liverpool, London, Anvers, Hamburg, Havre, Mar-

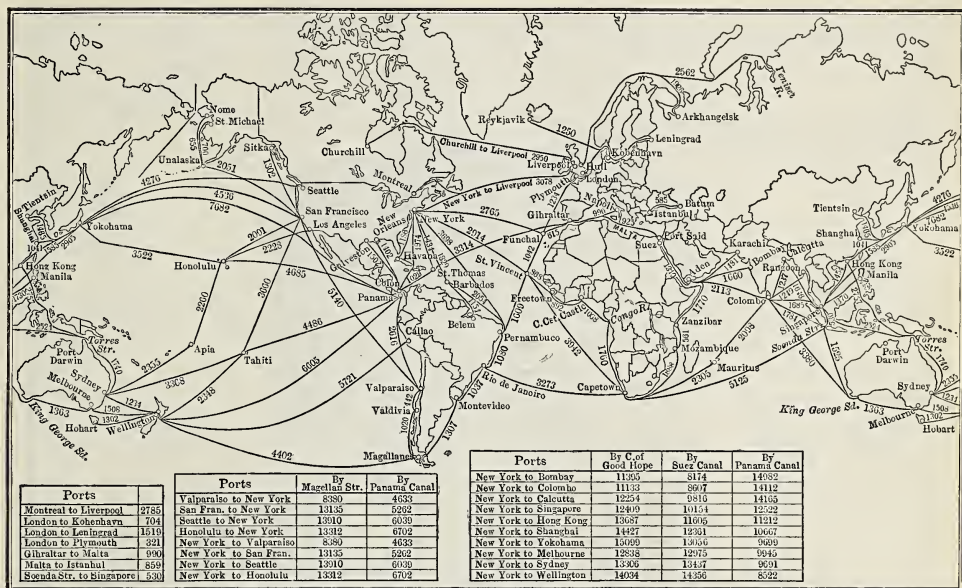


Fig. A. This map shows the steamship routes and distances between certain of the large ports of the world.

seille, Genova, with smaller numbers to København, Newcastle, Bergen, Stockholm, Bordeaux, Peiraievs, Alexandria, Istanbul. The city of Anvers alone has 110 lines of steamers, of which nine go to the United States.

There are also many steamship lines to distant continents from Houston, Galveston, New Orleans, and Mobile on the Gulf of Mexico, and from Seattle, Portland, San Francisco, and Los Angeles on the west coast.

Exchanging words and ideas. We have become even more skilful at exchanging information than we have in exchanging things. Can you follow the steps of man's advance in sending an idea to another man (Fig. 428-A) by: messenger, signal fire, drumbeat, flaming arrow, smoke signal, town crier, sign language, flag code, rocket from a ship at sea, carrier pigeon, messenger on horseback, semaphore (used on railroads), wigwag, letter, telegram, telephone, radio, and television?

As with transportation, many of the changes in exchanging ideas have been made within a few decades.

Messengers and stagecoaches. Cheops (who built the Pyramids), Julius Cæsar, and George Washington depended upon the man on horseback to carry messages in a hurry. Paul Revere was such a messenger.

The first daily newspaper in the United States was published in Philadelphia in 1774. The newspapers were carried by horseback and stagecoach, several days being required for news and letters to go from Boston to George Washington at Mount Vernon, near Washington, D. C.

Daily mail. Every reader of this book has seen mail which comes by train, by truck, by automobile, by airplane, or steamship. By these means mail is now carried daily to millions of homes in the United States, Europe, and to some countries in Asia, Africa, South America, and the islands of the sea.

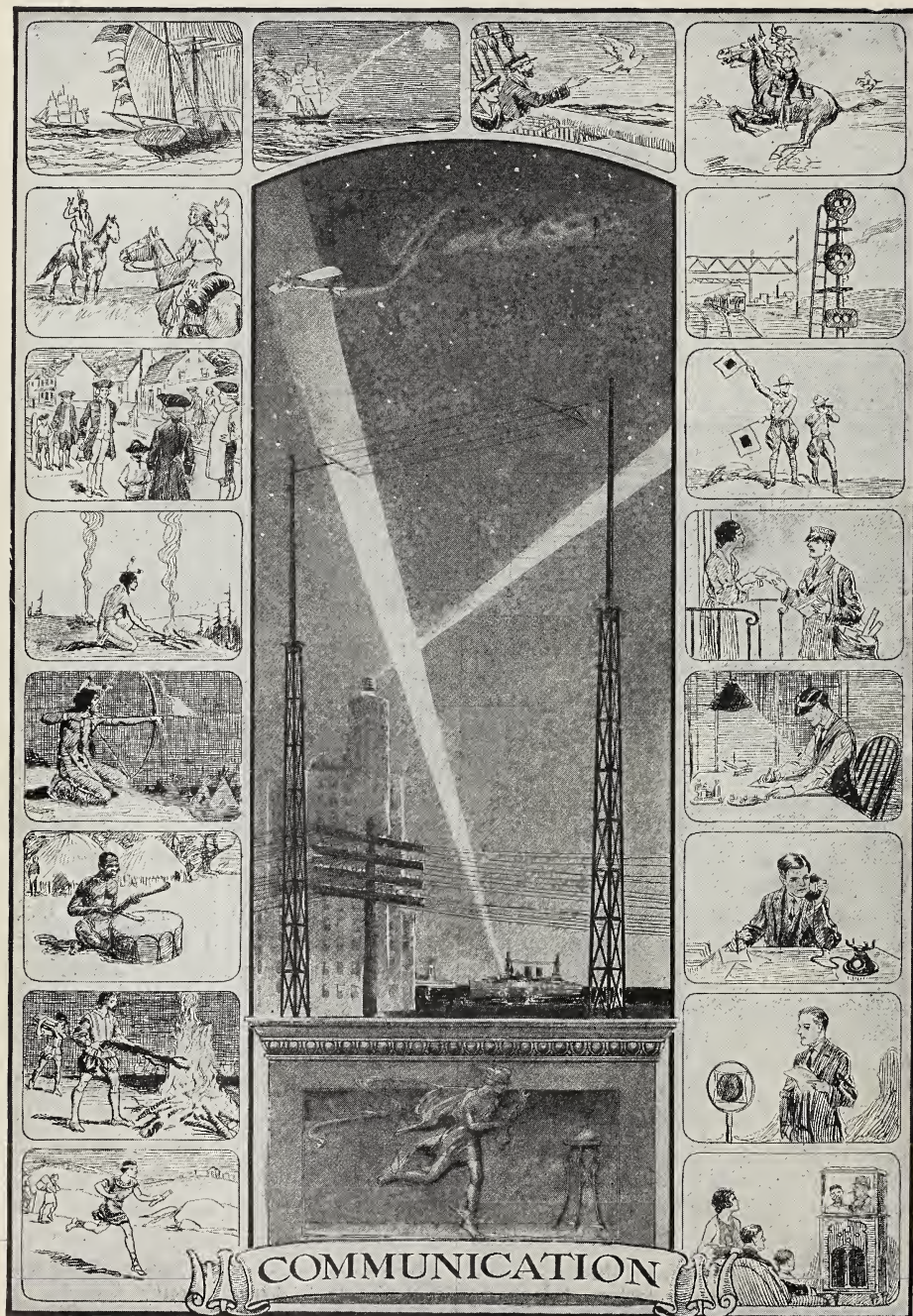


Fig. A. Tell something about each of the forms of communication which you see in these pictures.

Quick as lightning. Since Morse perfected the telegraph in 1844, messages traveling thousands of miles in a second can be sent by wire. The ocean cable invented by Cyrus Field has carried telegrams under the oceans since 1866. The telephone, invented by Alexander Graham Bell, in 1876, makes it possible for us to talk to distant people at any time of day or night. There are millions of telephones in use. They are an enormous convenience in business. People are constantly talking to one another from house to house, farm to farm, town to town, city to city, nation to nation. Then came the wireless telegraph invented by Marconi in 1896. This was soon followed by the radio, begun through the invention of the vacuum tube by De Forest, in 1906. I shall let you tell about the radio, except that I want to point out one thing. The manager of a fleet of tramp steamers can sit in his office and talk to the captains of his ships in every sea more quickly than George Washington could talk to the teamsters and plowmen on his farm.

These changes have made for us a new kind of world quite unknown when my grandmother was young.

The world neighborhood. While my grandmother was a little girl, a high official of the British government wrote a book complaining about the hard luck of England in her attempt to trade with China. China, like the United States, has a great variety of natural resources and many kinds of climate; the expert hand workers of that country made everything that the people needed in 1820. The Englishman complained that there was not a thing in Europe that the Chinese wanted or would take in exchange for the tea and silk which the English people wanted—nothing but silver, and the English had to get that from some foreign place.

In that day China in its trade did not differ very much from my grandmother's neighborhood, but now, since the age of machinery has come, England and the United States send to China automobiles, alarm clocks, cameras, locomotives, and a thousand other things which come out of our wonderful machine age and which the Chinese do not yet make.

How big is the neighborhood that supplies your needs? Sit down and figure up the list of troubles that would happen in your neighborhood if there were no tin, no tin cans, no tin buckets, no tinware in the kitchen. Then remember that we do not produce tin in the United States. We buy it from Bolivia, the Malay Peninsula, the East Indian islands. Furthermore, we cannot make tin plate, of which tin cans are made, without the use of palm oil from the palm trees of West Africa.

THINGS TO THINK ABOUT AND TO DO

Writing questions. Write twenty incomplete sentences about the facts contained on pages 421-429. One such sentence might be: *A ton of freight carried one mile is a ———.*

Exchange your sentences with a classmate. He will try to complete your sentences. You will try to complete his sentences.

The railroad map. Study Figure 424-A and try to give at least one good reason why any particular locality on the map has many railroads; few railroads; no railroads at all.

Communication. Select one of the inventions illustrated on page 428. Tell how this invention created new wants, needs, and desires. Show how these new wants, needs, and desires made new jobs. Show how the new invention made us more dependent on each other and on neighboring countries.

Troubles. Make a list of the troubles that would happen if you could not buy rubber from some foreign country, for we use more than half the rubber that is produced in the world, but we do not make a ton of it in the United States.

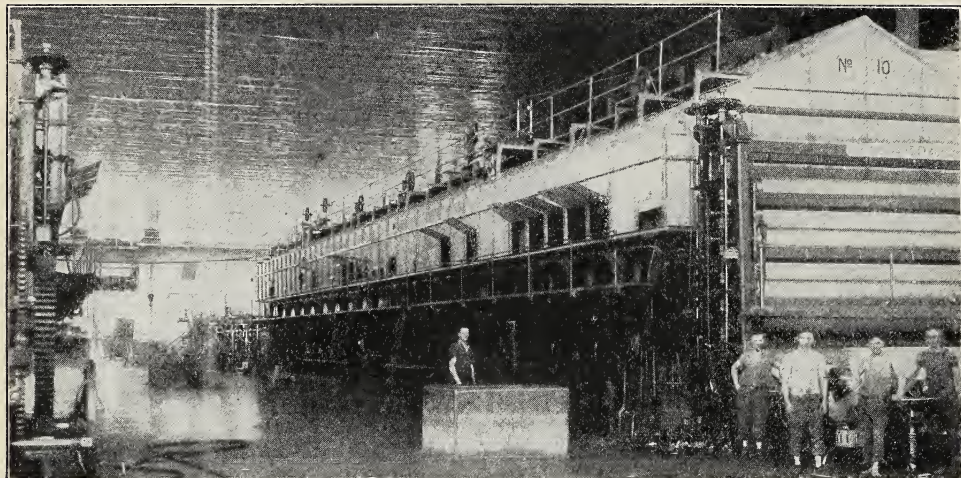


Fig. A. One of the paper-making machines at Corner Brook, Newfoundland. It runs day and night. Soupy-looking water containing wood pulp flows in at one end. Rolls of paper are wound up at the other.

HOW COUNTRIES HELP EACH OTHER

✍ As you read this section, think: What workers may have helped in some way to supply me with the book which I am reading?

Does trade help both parties? When my grandmother was a little girl and each neighborhood almost supported itself, people could only live comfortably where it was possible to grow a great variety of crops. Now we can have a town with comfortable houses and good food in any place that can produce one thing easily and has railroads or ships to carry its produce away and bring back goods.

The paper-mill town. For example, I took a trip to Newfoundland not long ago. Newfoundland is a rough and rocky land surrounded by cold water — so much cold water that the climate does not suit farming very well. It has but three important exports: pulp and paper made from wood, fish, sealskins, and seal oil from the sea, and some iron ore.

My boat landed on the west coast, at

the little town of Corner Brook, of which you have probably never heard. A few thousand people live there, surrounded on all sides by woods and rocks, but not a single farm, not one good garden, only a few little patches of lettuce and cabbages, and occasionally a few potatoes. But down at the water front is a huge paper mill running night and day, grinding up the spruce logs that are floated down the river. Each autumn 2500 men go to the woods, and there for months, they chop thousands of cords of wood to float down the river to feed the great mill that turns out six hundred tons of newsprint (paper for newspaper) every twenty-four hours.

At this paper-mill town my ship unloaded 10,423 packages of freight. All the afternoon and all of the next forenoon and most of the next afternoon the winches rumbled, and stevedores with hand trucks trundled barrels, boxes, bundles, bales, and cartons into the warehouse, over to the cars, or to the trucks. This freight included 105 packages of iron and steel goods, including rivets, bolts, wire, steel

bars, auto repair parts, and also a sewing machine, a refrigerator, and one automobile. There were many repairs for the paper mill, and 125 cases of axes for the winter work of chopping down trees.

There were 159 packages of canned goods — jam, fruits, vegetables, tomato juice; 65 crates, cases, or baskets of fruit, including watermelons, grapefruit, plums, lemons, apples, grapes, bananas. Then came 188 quarters of frozen beef, 360 barrels of pork, 132 other boxes, barrels, or packages of meats and food, including bologna, smoked sausage, beef tongues, cheese, poultry, and one keg of pickles.

The main food supply showed up in 1000 barrels of flour, 865 sacks of flour, 102 sacks of rice. The town's milk supply and some food for the horses at work in the woods appeared in the form of 850 bales of hay and 5,867 sacks of oats. Then came chicken feed, rubber shoes, aluminum kitchen ware, steel roofing, asbestos roofing. There were dozens and dozens of packages of furniture — wood furniture, rattan furniture, steel furniture, brass furniture, beds, mattresses, chairs, bureaus, tables, mirrors, baby carriages, dolls, go-carts, express wagons, roller skates, one big doll, and sixteen baby dolls.

All this was from *one trip of one ship to one town*.

The future of Corner Brook. You can easily see that people could not live in Corner Brook unless their paper mill keeps on selling paper.

While this town is off there in Newfoundland, with the sea on one side and the stony forest on the other, its people are very much like most of the rest of us. If we lose our jobs, we are in trouble, and the people of the village or town that depends upon a factory or two are in trouble if that factory or those factories cannot sell their goods. The coal-mining

village is in trouble if people quit buying coal, and the dairy farmer and the wheat farmer are in exactly the same fix if people quit buying milk and wheat.

The family — the town — the nation. If we look a little further, we will see that nations are very much like the town of Corner Brook. It seems that every farm depends upon some town, and that every town depends upon some other town or place.

A source of income. It is nice to get things from foreign countries. We have to have them, but think out the answers to these two questions: (1) What happens in a little country town in the cotton section of South Carolina or Georgia or Alabama or Mississippi or Louisiana or Texas when foreign countries buy lots of cotton and the price is high? (2) when they buy but little and the price is low?

Our own rich country. The cutting off of foreign trade would paralyze our country less than it would any other country. This is true because no other country in the world has so great a variety of the foods and raw materials needed to feed men, beasts, and factories.

We will now take up, one by one, a number of the leading industries of our country, and see how well we are supplied with resources, and how our industries compare with those of other countries.

THINGS TO THINK ABOUT AND TO DO

How well do you remember? 1. What is meant by the statement "Each neighborhood almost supported itself"?

2. What does Newfoundland have to sell to other countries?

3. What does Corner Brook have to sell?

4. How do the people of Corner Brook get other needful things?

5. How are the people of Corner Brook like your family? neighborhood? state?

6. In which kind of neighborhood would you prefer to live: a neighborhood like Grandmother's or a neighborhood like Corner Brook?



Fig. A. Distribution of rainfall throughout the world from November 1 to April 30. The "wind roses" in the oceans show the directions from which the winds blow during December, January, and February.

OUR BREAD SUPPLY — WHEAT AND THE OTHER SMALL GRAINS

After you have read this section, construct three bar graphs (page 437) showing: (1) production of wheat by countries; (2) export of wheat by countries; (3) import of wheat by countries. The figures may be found in the Appendix.

PART 1, WHEAT

Bread, the staff of life. Long ago a very wise man said "Bread is the staff of life," which, of course, meant that in his country bread was an important food. In our country, also, nearly everyone eats bread, although in some parts of the world bread is unknown.

Nutritious bread can be made of any of our grains — wheat, barley, rye, oats, corn, Kafir corn, buckwheat, or rice. But wheat bread is best liked because wheat flour has more *gluten* than the other grains. Gluten is a sticky substance, which holds bubbles of yeast inside the dough. This makes the bread porous or light when baked.

Grown in many lands. There are climates that suit wheat in every continent,

and the crop is grown in many countries. At present there are four great exporters: Canada, the United States, Argentina, and Australia. Before the World War, Russia was a great exporter of wheat. She may become so again at any time. She has the land.

The American wheat crop. Wheat is grown in the United States under four very different sets of conditions. We can understand this best by making much use of Figure 422-A.

(1) **Wheat in lands with Mediterranean climate.** Look carefully at region number 12, the region having a Mediterranean type of climate, about which we studied on page 56. This climate suits wheat especially because it is dry at the time of ripening and harvesting. Dry weather makes grains plump and fat.

The United States, unfortunately, has only a small area of this excellent wheat climate. It is to be found only in a part of California. The early farmers of that state grew great fields of wheat and sent it by shiploads in sailing vessels all the way around South America to Europe.



Fig. A. Distribution of rainfall throughout the world from May 1 to October 30. The "wind roses" in the oceans show the directions from which the winds blow during June, July, and August.

But California's population has increased greatly, and so many of her wheat fields have been planted to fruit orchards that she now does not produce as much wheat as her people use.

The areas with Mediterranean type of climate in Chile, in South Africa, and in the countries along the Mediterranean Sea are like California in that their areas of wheat land are small, so that the home market takes about all the wheat they produce. The wheat ships from Adelaide, South Australia, carry the only important exports of wheat from a land with a Mediterranean type of climate.

(2) **Wheat on the small farms of the humid-summer lands.** Wheat is grown in varying quantities from Massachusetts to southern Minnesota and eastern Kansas, and from Wisconsin to northern Georgia, in a country where the moist summer suits corn well but sometimes injures wheat. (Fig. 422-A, region 11).

In this wide region wheat is grown as one of several crops in a rotation. A very common rotation is as follows: winter wheat with clover and perhaps

other grass seed sown broadcast among the wheat plants in very early spring. The clover and grass plants start growing under the wheat and make a crop of hay or pasture the next year. Then follows a crop of corn in the third or fourth year and then back to wheat again.

Wheat is grown by this same method in all the countries of west-central Europe — United Kingdom, France, Belgium, the Netherlands, Germany, Poland, Czechoslovakia, Switzerland, Austria. The small, well-worked farms of England, the Netherlands, and Belgium give larger yields to the acre than we get in the United States.

North China also has an area with this corn and wheat climate (Fig. 422-A, region 11). Much wheat is grown and eaten there; but, as in western Europe, there is none for export.

(3) **Wheat in the warm lands of scanty summer rain.** The wheat region just mentioned — namely, the one from Massachusetts to eastern Kansas — gradually changes in central and western Kansas into a climate where the summer rain is not heavy enough to make a good crop of

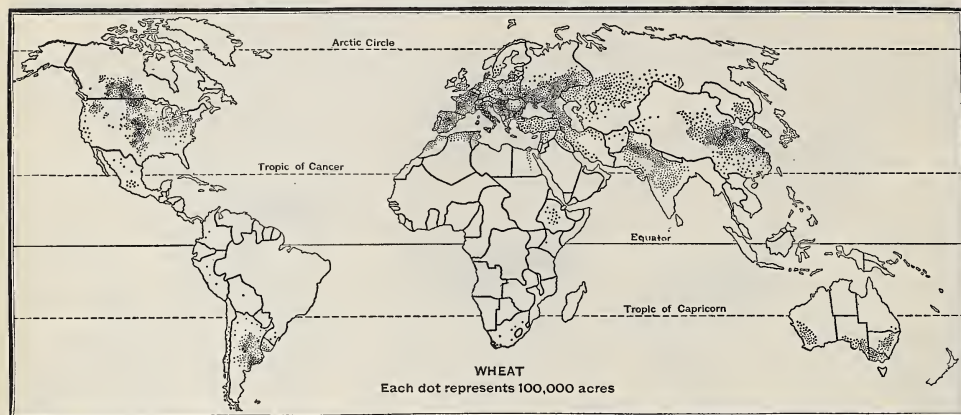


Fig. A. A world map showing acreage planted to wheat in different parts of the world.

corn. Since wheat can get along with less moisture than can corn, winter wheat here becomes a crop of greatest importance. Instead of a farmer having a field of wheat and a field of several other crops, he may have nothing but half his farm in wheat this year and the other half in wheat next year, with the land lying almost idle between.

Some farmers even practice *dry farming*. They plow their fields one year, but do not plant anything. This permits the moisture which falls to accumulate in the soil. The next year they plant wheat, thus getting one crop for two years of cultivation.

This region of extensive wheat growing extends across western Oklahoma into northwestern Texas—the *Texas Panhandle*, as it is often called. This is one of our wheat export regions. The grain goes by way of Houston, Galveston, New Orleans, and Chicago.

Similar foreign wheat regions. The centers of continents, far from the sea, usually have less rain than the land close to the ocean. We find declining rainfall as we go west in Kansas. We also find declining rainfall as we go east in Europe.

For this reason the wheat growing in the Danube Valley, Hungary, Rumania, and the part of Russia (U. S. S. R.) between Rumania and the Caspian Sea resembles that of Kansas. The same set of conditions causes us to find a curious ring of wheat growing in Argentina to the west of a moist section near Buenos Aires.

Figure 422-A shows that this type of climate also appears in Australia and in South Africa. Wheat is also grown in both of these places. That grown in South Africa is not enough for home use, although the Australian section west of Sydney ships millions of bushels every year to markets over the sea.

(4) Spring wheat. If you will find the region marked 10 on the map (Fig. 422-A), you will see in two hemispheres the two greatest wheat regions in the world. Both are far from the ocean with its tempering waters. Both regions have bitter cold winters, little snow, and a scanty rain in summer. These conditions make a natural grass land, and natural grass lands with their billions of grass roots rotting in the earth make black soil in this climate. There is so little rain that the fertility is not soaked out and carried away by

springs and streams, so this black soil is rich.

Both of the regions also happen to have great expanses of level land, easy for the tractor plow, by which one man can plow many acres in a day; easy for quick seeding; and easy for quick harvesting. The cheap bread supply from these two great wheat regions did much to increase city populations of eastern United States and western Europe between 1875 and 1925.

The cold, dry winter of this climate kills young wheat plants. But they can be sown in the spring, grow through the warm but not too hot midsummer, be harvested in August and September, threshed as quickly as possible, and then be rushed away to the ports for shipment overseas before the harbors freeze on the Great Lakes, Hudson Bay, the Baltic Sea, or the Sea of Azov.

The North American spring wheat region includes our wheat areas in Minnesota, South Dakota, North Dakota, Montana, and a little in Washington State. It has an even larger area and production in the Canadian provinces of Manitoba, Saskatchewan, and Alberta.

In European Russia, Siberia, and in Manchuria the area of this spring wheat soil is said to be much larger than it is in North America.



Fig. A. Flax has an oily seed and a stalk containing good fiber. Flax grown for seed is handled in every way like wheat. It is a favorite crop on newly broken black-soil lands. For forty years the chief export supply has come from Argentina and the spring wheat belt of North America. By the selection of seeds of desired type we have the short, many-seeded, and the tall, fibrous-stalked, few-seeded varieties. Flaxseed (linseed) oil is used for paint, and the remaining cake is a choice stock food.

PART 2: BARLEY, RYE, OATS, AND FLAXSEED

Cousins of wheat. Barley, rye, and oats are cousins of the wheat plant—so much so that very few persons who read this book could tell the difference between young plants of any two of the four grains.

Rye. Rye differs from wheat in being able to do better in cold climates, in sandy soils, and in poor soils. The greatest rye area in the world is the sandy plains of northern Germany, Poland, and north-central Russia with their cold winter and cool summer. The greatest area of its growth in the United States is in the spring wheat belt of North Dakota, South Dakota, and Minnesota, with Wisconsin and Michigan following next in order of importance.

Barley. Barley differs from wheat in three respects. It can stand more drought; it ripens a little earlier; it yields more grain to the acre. Because of these three qualities, the production of barley has increased in the United States lately.

Because barley stands drought, we find the largest acreage is grown in the Dakotas and Minnesota. Much rye is also grown in the Great Plains region of Kansas,

Nebraska, and Colorado, and it is very important in California, where it is grown in sections that are too dry for wheat.



Fig. A. The corn cultivator plows up some weeds, covers others, and loosens soil ready to wash away at the next rain. Should a farmer be allowed to do this on hilly land and ruin it with a few crops?

Because of the large yield, barley is very important in north-central Europe, where the climate is too cool for corn.

Oats. This grain, excellent for human food, is used chiefly to feed farm animals. The oat plant can produce a good harvest in climates that are too wet and cold for wheat to be dependable. Therefore the oat crop is very important in Ireland, Scotland, Norway, Sweden, and the Baltic countries.

Oats are also important in the spring wheat region of the United States and Canada, because the plant can be planted before wheat and harvested at a different time. This enables the farmer with the same machinery to grow more acres of two-grain crops than he can of one.

Iowa and Illinois lead all the states of our country in oat production.

Flax. See Fig. 435-A.

THINGS TO THINK ABOUT AND TO DO

Exporters and importers. On an outline map of the world (which you can trace by laying a sheet of paper over Figure 434-A) show the following: (1) chief wheat-exporting nations (see Appendix); (2) chief wheat-importing nations; (3) trade routes over which wheat is carried from seller to buyer.

CORN

☞ Why is the United States the world's largest producer of corn?

An American grain. Corn may be called an American grain for several reasons. One is that the United States produces more corn than all the rest of the world. Secondly, corn seems to be a native of this continent. The Indians gave presents of maize to the first European explorers of North America. The explorers named this new food *Indian corn* (grain). Since the Indians had neither wheat, barley, oats, rye, nor buckwheat, it was fortunate that they had corn. Corn yields more to the acre than any of the small grains. Like them, it is good food for men and many animals.

Doubtless the Indians had corn for a long time, for the plant has been so changed from its wild parent that we are not sure what plant that parent was. Some botanists believe that corn is a hybrid, coming from more than one plant. When America was discovered, there were many varieties of corn growing on the patch farms of the semi-nomadic Indians. Maize was a

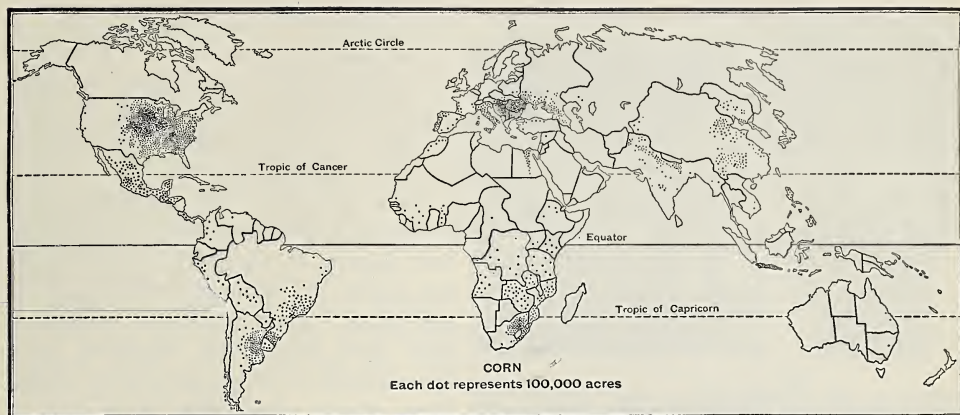


Fig. A. A world map showing acreage planted to corn in different parts of the world.

staple of Indian diet from Massachusetts to the Gulf of Mexico, from Dakota and Nebraska to Arizona.

The Indians of New Mexico and Arizona, who lived in stone villages, grew corn by irrigation. Corn was then, as it is now, a great crop and the chief food of the Indians in Mexico, the uplands of Central America, and the Andean countries of South America. These countries might be called "Tortilla (corn cake) Land."

Corn climate. The corn plant needs four to five months of warm, moist weather. It needs warm nights as well as warm days. Some varieties will mature in ninety days, but little corn is grown where the growing season is less than 140 days. Even a touch of frost kills corn.

Corn is being grown farther and farther north because it can be cut *before it has fully ripened*, chopped — ears, stalks, and all — and stored in silos. *Silage* is good food for cattle and sheep. It will keep in the silo for a year or more.

The long, moist summer in which corn does best can be found in several climatic regions (Fig. 422-A); in the equatorial forests, the better watered, tropic grass lands, the warm, tropic uplands, and in the three areas (numbered 11, 13, and 14)

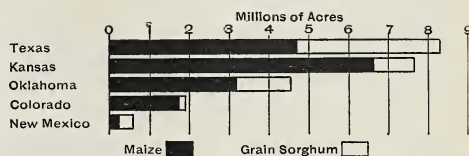


Fig. B. Production of maize (corn) and grain sorghum in five states.

that are found on the eastern sides of continents.

The corn and winter wheat belt of the United States (Fig. 422-A, region 11) is the best of all the large corn regions. The fertile soil and a dependable rainfall are most important in producing a crop.

The Corn Belt. In what states is corn grown (Fig. 439-A)? The yields to the acre in New England are better than in the Central States, but so much of New England is hilly and rocky that the cornfields are small. Excellent crops of corn are grown, too, on the rolling and hilly lands of New York and Pennsylvania and throughout the Appalachian region. However, the area from central Ohio to and including part of South Dakota, Nebraska, and Kansas has such a vast expanse of rich, relatively level land, where great quantities of corn are grown, that the region is called the *Corn Belt*.

In the Corn Belt, July is the vital month

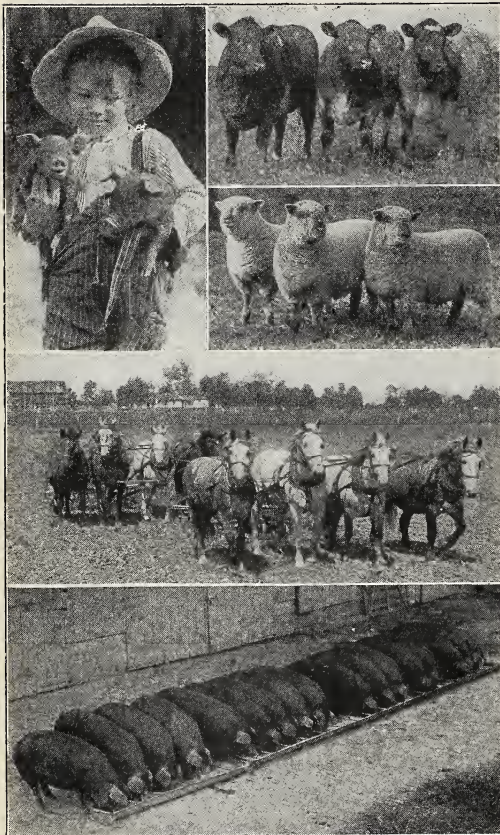


Fig. A. "Corn goes to market on the hoof." How do these pictures illustrate this statement?

for corn, because in that month the plant often grows in height from two feet to six, seven, eight, or even ten feet. Then it blossoms, throws out the husk, and starts to make seed (the ear of corn). To supply food for this great burst of growth, the plant must have a soil rich in plant food and plenty of moisture to dissolve that food.

Corn and meat. When you are eating beef, ham, bacon, lamb, chicken, duck, turkey, butter, or are drinking milk or cream, you are almost certainly getting, indirectly, corn in some of its many forms. Most of the corn grown in the United

States is fed to the animals on the farm or in the neighborhood where it is grown. A very small percentage goes to city markets, and still less is exported, although the grain is very popular as food for animals in western Europe.

Grain sorghums. The uncertain rainfall of the southwestern edge of the Corn Belt, namely in Oklahoma and Kansas, has caused the farmers there to turn to new crops—grain sorghums, cousins of corn, that have been imported from dry countries in Africa and North China. These plants, often called *Kafir corn* or *milo*, can stand more drought than corn can stand. They have become very important in southwestern Kansas, western Oklahoma, northwestern Texas, and in a part of New Mexico. Grain sorghums are much like corn as a crop to grow and also as food for beast or man.

The corn belt of Europe. The corn region of Europe is much smaller than that of North America. The part of it in the Danube valley and near the Black Sea may be compared to the western portion of our Corn Belt. The cyclones crossing Great Britain blow sea air, too cool for corn, far into northwestern Europe in the latitude of France and Germany. Only a little corn is grown in France. But corn is an important crop in the Danube valley, the Balkan Mountain region (what countries?) and in a little of south Russia. In the Danube valley the farmers divide their grain lands between wheat and corn very much as do the farmers in the North American Corn Belt.

Corn in North China. Is there a region in North China which has the type of climate suited to corn and winter wheat? The people have grown grain sorghums for many centuries, and now grow our kind of corn also in the parts with better rainfall.

Corn in the Southern Hemisphere.

How many places in the Southern Hemisphere have the corn and winter wheat type of climate (Fig. 422-A, region 11)? Does the map explain why the Argentina crop is not usually so great as that of Illinois? The Argentine yield is uncertain because of droughts, floods, and locusts, but the black soil is of the best, and the level lands are splendid for the plow.

It suits the Argentine tenant farmer to sell his crop quickly for cash, so Argentina exports more corn than all the other countries of the world.

Cotton Belt of the United States. How many of our Southern States grow corn (Fig. 439-B)? These states have long grown cotton, fruits, and vegetables for their chief money crops, with corn second in importance. Here the soils are less fertile than in the Corn Belt. The heavy rains of winter and summer have leached them. But with the aid of legumes and fertilizers, the skilful farmer can grow large yields in these Southern States.

Corn in other regions with the Cotton Belt climate, number 13. The map (Fig. 422-A) shows you that there are five regions in the world with a climate like that of our own Southeastern States. In all of them corn is grown to some extent, but in China rice and sweet potatoes are much more important. Corn is grown but little in Australia. It is more important in South Africa, where the native has long grown Kafir corn and has been glad to take up the growing of maize, or Indian corn.

Southern Brazil is the most important of all these Southern Hemisphere hot corn lands. In our own Southern States we found cotton was the money crop and corn second in importance. In the Brazilian coffee belt corn is second in importance to coffee.

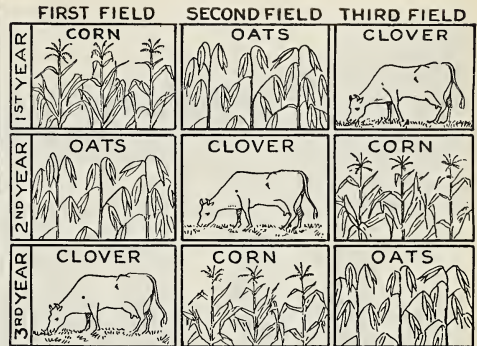


Fig. A. Three-year crop rotation on a farm in the American Corn Belt.

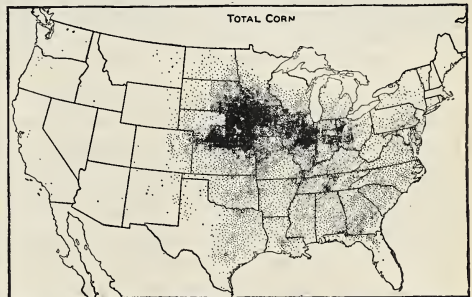


Fig. B. Corn in the United States. Each dot represents 10,000 acres planted to corn.

THINGS TO THINK ABOUT AND TO DO

My dictionary. Look up the meaning and write a good definition for each of the following:

| | | | |
|---------|------------|------------|------------|
| maize | botanist | hybrid | nomad |
| diet | irrigation | Tortilla | silage |
| silos | sorghums | milo | Kafir corn |
| legumes | leached | fertilizer | cyclones |

Making graphs. 1. Construct a bar graph showing the production of corn by countries (Appendix).

2. Construct a bar graph showing the export of corn by countries; the import of corn by countries.

Questions about corn. 1. How did corn get its name?

2. What kind of climate is needed to grow corn?

3. How is the silo helping to extend the lands good for corn growing?

4. What states are the center of the American Corn Belt?

5. How is most of our corn marketed?

6. Where is corn grown chiefly in Europe? South America?



Fig. A. Planting rice in Japan. See the mound of earth on which two men are standing. How do these mounds help the young rice plants? Figure 275-A shows how tractors can be used in the rice fields.

RICE AND THE BEAN FAMILY

“The density of population decides to some extent what man shall eat.” As you read this section, find evidences of the truth of the above statement.

PART 1: RICE

The great rival of wheat. Rice is a wild plant of the swamp. It is a gift of Asia. For ages rice has been cultivated from Japan to India and the East Indian islands and in all lands between. It rivals wheat in being one of the great foods of the world. To millions, even hundreds of millions, of people in southeastern Asia the bowl of rice is more important than is the loaf of bread to the peoples of Europe and America.

Long ago men discovered that the rice plant did best if it could grow standing in shallow water for most of its life. This guarantees its water supply and helps it to be twice as productive as wheat. Growing rice in ponds is called *paddy culture*, and may be seen from Ceylon to southern Manchuria and to a small extent in nearly all tropic countries. Long before the Revolutionary War a paddy-grown rice industry was introduced into South Caro-

lina, where Negro slaves did the work in the Asiatic manner.

Conquest by machinery. In recent years the inventive Americans have learned to grow rice by machinery just as we have learned to grow wheat by machinery. Now we use road-grading machines to build the banks and to level the fields. Engines driven by gasoline or electricity pump the water to flood the rice. The plowing, harrowing, seeding, harvesting, and threshing are done exactly as for wheat.

Rice land. Rice land should be level, so that ponds can be made easily. It must have a tight bottom, so that water will not leak out; there must be plenty of water for flooding; and a warm summer, such as is required for corn.

Machine-grown rice is produced in the level land near the coast of the Gulf of Mexico in Texas, Louisiana, and on the Mississippi flood plains in Louisiana and Arkansas. Our newest rice industry is on the water-born lands of California, in the Great Valley, not far from San Francisco, but half the acreage of the country is grown in Louisiana.

The rice trade. In recent years the American farmer has been getting less than one cent a pound for his rice. He produces about 40,000,000 bushels a year and exports about half of it. With us, rice is only a supplementary food of secondary importance. People of the United States and Europe eat only a small amount of rice compared with that eaten by the people of the wetter parts of south-eastern Asia.

The great exporters of rice are Burma, Siam, and Indo-China. Each country ships more than ten times as much each year as does the United States. Even Italy, with her irrigated rice land in the Po valley, exports more than the United States, and Spain exports a little. The great rice importers are China, British Malaya, Netherland India, Ceylon, Japan, and every country of Europe except Spain and Italy.

The three chief exporting countries do not produce as much rice all together as does India or China, but they are lands of scanty population and small need; therefore they have a surplus.

PART 2: BEANS AND THE BEAN FAMILY

An important source of food. The beans are very important to the human race, because they give a cheap source of one of the kinds of food that is more costly to get from other sources. To build our bodies and repair tissue, the food we eat must contain the substance called *protein*. What foods are rich in protein (Appendix)? To provide energy to run this human machine, the body needs foods that have *fuel value*, usually called *carbohydrates* — mainly starch and sugar. Fat is also a fuel food.

Beans give us several kinds of nourishment and are used in many, many ways. Some beans are good to eat while green

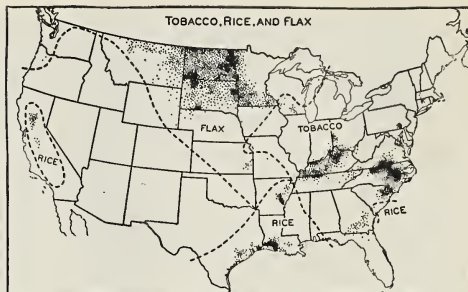


Fig. A. Each dot on this map represents 2000 acres sown either to rice, tobacco, or flax.

and within six weeks after planting time. Others are best after they ripen and dry. In the dry state beans will keep for years. Beans are eaten in many more forms than wheat or rice. A recent plant explorer from the United States Department of Agriculture says the Chinese have at least 400 foods made from soy beans.

Soy beans. For many centuries the people of China, Japan, and Chosen have grown a kind of bean called *soy bean*. It is one of the summer crops on their crowded little garden farms. I have seen farms in Japan where the narrow banks between the paddies were so completely covered with soy-bean plants that there was no room for your foot. As the farmer walked carefully through the paddy, pulling weeds from the rice, he also pulled weeds that appeared among the soy beans.

The Chinese and the Japanese eat soy beans as we eat other kinds of beans. Also, they crush them and get the oil. For them soy-bean oil is as butter, bacon, and cream are for us.

Soy beans are ground in water until the mass looks like milk. It has almost the same food value as milk. This soy-bean milk may be made into curd and cheese having almost the same food value as our cheese. Indeed, it is fair to say that the soy bean is a kind of oriental cow. A glass of milk is unknown to scores of mil-



Fig. A. Roots of soy beans—same seed, same soil, same field, planted same time, only fifteen feet apart. One was inoculated with the germs that produced the bacteria that made the nodules which take nitrogen from the air and supply it to the bean plant and to plants that come after it. Why are nodule-bearing plants popular in *crop rotations*?

lions of these bean-eating and bean-drinking people. The soy beans thrive in the dampness of the rice climate and also in the droughts of the spring wheat climate in both Asia and the United States.

Beans for export. In the last quarter of a century railroads have been built through Manchuria. Millions of Chinese have emigrated from the crowded lands farther south to the almost empty plain of Manchuria. Most of them grow soy beans for a money crop, and the bean export has grown very rapidly to be one of the great trades of the world.

Soy beans in the United States. Just as we have gone to Africa and North China to secure new members of the corn family, so we have secured new members of the bean family from China. The growth of soy beans as a farm crop is spreading rapidly in the United States. Many of the readers of this book have doubtless eaten soy beans without knowing it, because they are a very important cow feed.

For the cow the bean is sown broadcast, cut and dried for hay, and fed to the cow whole—beans, pods, leaves, and stalks. In North Carolina and some other Southern States the farmers have a very ingenious

way of growing the beans where the dry beans are the main crop. They plant a row of beans and a row of corn. Some of the nitrogen in the nodules on the roots of the beans is taken by the corn roots and fed to the corn, so that by this sandwich-crop method the land yields more than half a crop of beans and more than half a crop of corn.

The soy bean is spreading also as an article of human food in this country. Soy-bean cheese is a regular article of diet in my house, and can be bought in many stores like other packages of cheese.

Navy beans and lima beans. A little white bean which is commonly used for baked beans in America is grown in fields chiefly in New York, Michigan, and Colorado.

Millions of American gardens have the well-known green beans and lima beans, but most of the commercial crop of lima beans in the United States is grown in California.

THINGS TO THINK ABOUT AND TO DO

Importers and exporters.

Importers

| |
|---|
| a |
| b |
| c |
| d |
| e |

Exporters

| |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |

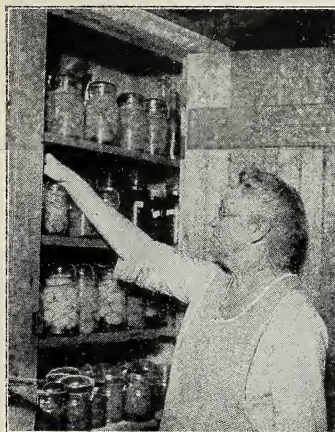
1. Copy and enlarge the above figures. See Appendix Tables and fill in the leading rice importers; exporters. Give reasons why each country exports rice; imports rice.

2. Make a graph showing the production of rice in leading countries.

Comparisons. 1. Compare rice growing with the growing of corn and wheat as to soil erosion.

2. From the table of food values (Appendix), find other foods that resemble rice in food value.

Soy beans. Make a list of all the uses for soy beans that you can find. Be sure to include use of plant as fertilizer.



Figs. A-B. At the left the farmer's wife takes a jar of home-canned fruits or vegetables from her cupboard for the family dinner. At the right is a modern canning factory.

VEGETABLES

☞ Why should vegetables, especially leafy vegetables, form a large part of our diet?

Vitamins. During the last few years a great change has been taking place in the food habits of the American people. We are eating more fruits and vegetables, especially vegetables. This has happened for several reasons. One reason is the great scientific discovery that was started by a Dutch physician in Java.

The name of the physician was Eijkman. He had a coop of chickens that suddenly got sick. The symptoms were like those of a dreaded disease called *beriberi* which often killed men on long sea voyages. The chickens had eaten polished rice — rice from which the outer coating called *bran* had been removed. The sick chickens all got well quickly when Doctor Eijkman fed them unpolished rice. The bran on the unpolished rice had provided *vitamins*. "Vitamins have been called 'the live element in foods' and their function likened to the 'ignition spark' of the internal combustion engine."*

Vitamins, as their name implies, are

vital — absolutely necessary — for normal growth and for health. Foods especially rich in vitamins are milk, fruit, vegetables, liver, cod-liver oil, and the germ of wheat. White flour, lean meat, and refined sugar have no vitamins.

Mineral salts. "Only five of the thirteen elements which enter into the composition of the body are present in the carbohydrates, fats, and proteins that supply the fuel or energy needs of the body."* The other eight elements needed for growth and health must come from the mineral salts. Foods especially rich in mineral salts are vegetables, particularly leafy ones, fresh fruits, whole grains, milk, cheese, eggs, and some meats. Doubtless many of the boys and girls who study this book are members of farm clubs, and there fore are studying the rules of health. They are learning to drink more milk and eat more vegetables.

New foods. We now have many vegetables that were unknown to George Washington. For example, about 1850 the tomato was a little wrinkled thing

* *Nutrition and Physical Fitness*, by L. J. Bogert, Ph.D., W. B. Saunders Co., Philadelphia, 1931.



Fig. A. Notice particularly the early vegetable districts in Florida, Louisiana, and southern Texas.

called a *love apple*. It was considered poisonous by many, and regarded only as a curiosity. We now know that the tomato is an unusually wholesome food, rich in vitamins.

Three great achievements with vegetables. Our increased use of vegetables is due in part also to three great new achievements. The most important is the discovery of the art of canning and the development of the canned fruit and vegetable industries. Second is the development of express train service to bring us fresh vegetables from distant places when the near-by supply is not ready to use. The third great discovery is the process of dehydration, namely, preserving fruits and vegetables by drying them at low temperatures.

Gardening and truck farming. There are gardens for family use near homes in every county in the United States, in the suburbs of almost every city, and in almost every village. *Truck farming* is the name applied to growing vegetables in fields for shipment to market. These large market gardens are to be found especially on sandy lands near almost every city to supply it with fresh food in season. There are also many localities, chiefly in the warmer part of the country, where farmers grow large quantities of vegetables for shipment early in the season

to northern cities. These are to be found in Florida and in every state between Florida and Connecticut.

Another important truck-growing center is in the south corner of Texas. One of the greatest is southern California, from which carloads of lettuce and many other vegetable foods go to nearly all parts of the United States in the period of greatest California production.

Canning vegetables. You would have great difficulty in finding a grocery store in the United States where you could not buy canned peas, canned corn, or some other canned vegetable. There are thousands of little canning factories scattered about the truck-growing districts, but chiefly in the North Atlantic Coast Plain between North Carolina and Connecticut, in the region near the Great Lakes, and in California.

Vegetables in foreign lands. In Europe there is a similar movement of early vegetables from southern locations—Egypt, Algeria, southern Spain, southern Italy—and also a similar use of canned vegetables, many of which are imported from the United States.

It is in China and Japan that vegetables reach their greatest usefulness to man. Meat is scarce, and these people long ago learned to eat many more leaf greens and vegetables than we do. For millions of the people of the Far East the supply from a distant market is almost unknown.

THINGS TO THINK ABOUT AND TO DO

Hints. The following expressions give hints to certain facts which you should have learned in your study of vegetable foods. Use each expression correctly in a sentence.

| | | |
|----------|-------------|---------------------|
| bran | Eijkman | internal combustion |
| proteins | love apple | ignition spark |
| truck | leaf greens | carbohydrates |
| elements | vitamins | mineral salts |
| beriberi | preserving | dehydration |



Fig. A. Looking down from Smiley Heights upon the orchard-clad slopes above Redlands in the southern California orange district. See the snow-clad mountains which supply water for irrigation.

OUR FRUIT SUPPLY

 Why does the fruit industry need good transportation facilities?

Fruit climates. The fruits, especially those that grow on trees, are particular about the climates in which they live. Some fruit trees are killed by winter cold, others have their blossoms destroyed by spring frosts; so fruits can grow commercially only in places where the climate suits them and their blooming habits.

1. The banana and pineapple. We have already read in this book that the banana is important in many parts of the forested tropics. The breath of frost lays low the great leaves of the banana tree. Therefore it will not grow in commercial quantities in any part of the United States. Fortunately for us, the fruit can be picked while green and hard, and brought to our markets while ripening.

The plantations that supply this country and most of Europe are scattered around the forested shores of the Caribbean, in Jamaica, Honduras, Costa Rica, Panama, and northern Colombia.

The pineapple is much tougher than most tropic fruits. We import fresh ones from the West Indies and Hawaii, but receive most of our supply in cans from Hawaii, where there are large plantations.

2. Oranges, grapefruit, and lemons. These three evergreen cousins, called citrus fruits, are natives of the wet tropics; and, like rice, bananas, and beans, are grown throughout the moister parts of the tropic world. Fortunately these trees can, at seasons, stand a little frost; therefore they can survive and make good crops in Florida and all the regions with the Florida type of climate.

The trees require much water and by irrigation they can be made to live and thrive in southern Texas and California. Thus the United States has three sources for citrus fruits. This is very fortunate, because the moist summer climate of the Florida type has oranges that ripen at a different season from those of the dry summer of the California (Mediterranean) climate.

The varieties of oranges and lemons from the Mediterranean countries have



Fig. A. Many fruit trees can produce only fruit if an insect has carried pollen from the blossom of a tree of another variety of the same species. For this reason, orchardists plant different varieties near to each other and often pay the bee man to bring his bees to the orchard at blooming season.

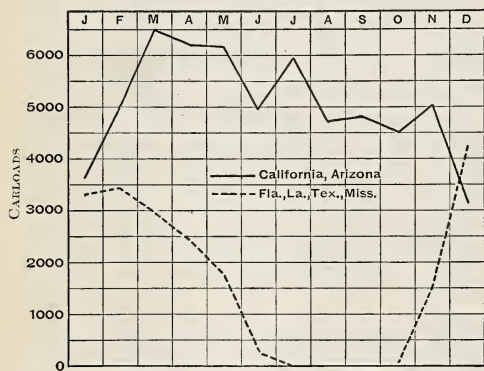


Fig. B. How does this graph of carload shipments of citrus fruits show the advantages of two types of climate?

been introduced into the Mediterranean regions of California, Chile, South Africa, and Australia.

3. **The apricot, peach, and cherry.** These fruits grow on deciduous trees, which can stand cold winters, but the trees often get into trouble by blooming too early in the spring. This is so true of the apricot that it is depended upon for a commercial crop only in California, where the protec-

tion of the western ocean lets this tender tree make dependable crops.

I have a nice big, healthy apricot tree near my cabin on the Blue Ridge Mountain not far from Washington, but it has only given one crop in six years.

The cherry is not injured so much by frost as the apricot, yet the greater part of the commercial cherry crop of the United States is grown in California, Oregon, and Washington. Other important cherry districts are in locations where the cold water of lakes cools the air and delays spring blooming. For this reason there are important cherry orchards along the shores of southern Lake Ontario, while cherry orchards are almost continuous in the small Green Bay Peninsula on the western side of Lake Michigan.

The bulk of the commercial peach crop, like that of apricots and cherries, is grown in California, whose canneries and peach-drying establishments supply almost all of the United States.

Peaches for eating fresh in the eastern part of the United States are grown in a succession of localities. One is in the uplands of Georgia. Another is on the foothills and slopes of the Appalachians in Virginia, Maryland, and Pennsylvania, where the elevation gives air drainage. Another is along the Great Lakes, where the lake waters delay the blooming.

4. **Apples and pears.** The apple tree is the hardiest of all our important fruit trees. The tree thrives and grows wild from Maine to Iowa, from Ontario to the hills of north Georgia. It is at home in most parts of the climate numbered 11 and the warmer parts of the climate numbered 9 (Fig. 422-A), also in most of northwestern Europe, parts of southern Chile, and in New Zealand, Tasmania, and cooler parts of southeastern Australia. The apple tree actually requires a frosty

winter, and for this reason it thrives in cool valleys in California, a thousand to two thousand feet higher up than the valleys that are occupied by oranges.

The greatest apple region in the United States is comprised of three small, separate, irrigated valleys on the east slope of the Cascade Mountains: the Yakima and Wenatchee valleys of Washington, and the Hood River valley of Oregon. In these valleys every apple tree is irrigated.

The section next in importance is adjacent to the Great Lakes in southern Ontario, northern New York, northern Ohio, and western Michigan. Another region rivaling this is the uplands along the eastern slope of the Appalachians, from the Hudson valley to north Georgia, with the state of Virginia leading in this region. Apple orcharding is most intensive near the Potomac River (Va., W. Va., Md.), where the climatic and soil conditions are good and where railroads following the river give quick access to western markets, eastern markets, and Atlantic ports.

Apples in foreign lands. While the apple is at home in northwestern Europe, the cloudy summer keeps the fruit from coloring or being as sweet as our apples, and, therefore, the United States and Canada have a heavy export to England, France, Belgium, the Netherlands, Germany, Denmark, Norway, and Sweden.

A few apples of American varieties are grown for local use in Chosen and Japan, but orchardists of Tasmania, New Zealand, and the cool parts of southeastern Australia have adopted scientific methods, and regularly export some of their crop to markets in the Northern Hemisphere. I have seen them for sale in Hawaii, China, Europe, and in the Hudson's Bay Company stores.

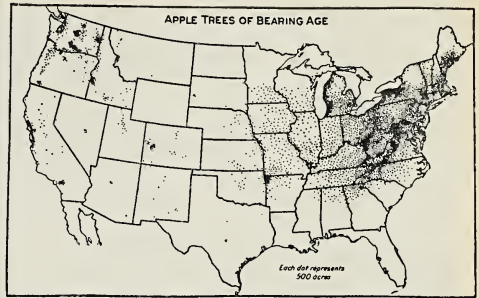


Fig. A. Give a reason for the many apple trees in Washington State; in Appalachia; along the eastern shore of Lake Michigan, the southern shore of Lake Ontario.

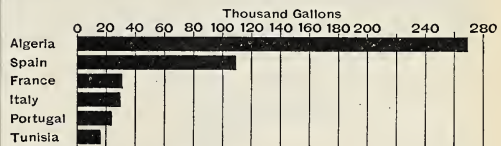


Fig. B. The leading wine-exporting countries and the yearly export of wine from each country.

The pear. The pear tree is much like the apple tree, except in shape, but it has one great weakness. A fungus, called the *pear blight*, attacks the leaves and bark, kills branches, and sometimes kills the whole tree. Since this fungus thrives least in dry climates, most of the commercial pear growing in the United States is in the dry, irrigated sections of California, Oregon, and Washington.

The grape. As with oranges, there are two groups of grapevine varieties: those that are native of lands with wet summers (corn-and-cotton climate), and those that are native of lands with dry summers (Mediterranean climate).

The many Biblical references to wine vineyards, and the vine prove the antiquity of this crop in the Mediterranean world. Wine, raisins, and fresh grapes in autumn have been important there for many centuries. The Spanish settlers carried the Mediterranean varieties with them to California and to Chile, and the English to South Africa and Australia.

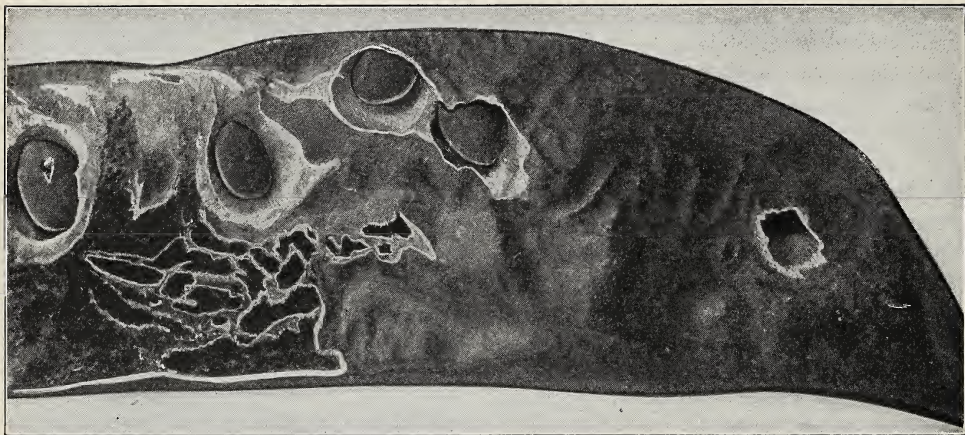


Fig. A. Life-size picture of a *part* of a honey-locust bean. It was seventeen inches long and had 29 per cent of its weight in sugar. In addition it had a substantial amount of protein, good for stock food.

As the United States depends upon California for the bulk of its grape products, so the European market has made the grape a very important crop indeed in Greece, Italy, Spain, southern France, and Algeria. There are some varieties of grapes that thrive north of the Mediterranean climate, in west-central France, but they will not stand the heat and humidity of southeastern United States.

Several varieties of wild grapevines thrive in eastern United States. These are *slip-skin* grapes, bearing such names as Concord, Niagara, Delaware. They are used only for eating fresh, or for grape juice. They are grown chiefly in the frost-protected locations on the shores of Lake Erie, Lake Ontario, and small lakes of central New York.

THINGS TO THINK ABOUT AND TO DO


Where. 1. On a sheet of thin paper trace an outline map of the world.

2. Indicate on the map the chief areas producing each of the fruits which you have been studying.

3. Show the trade routes by which tropical fruits reach the lands of frost.

Investigate and report. Select one of the fruits described in this section and make a special investigation and report to the class.

SUGAR

 How might we easily supply our own sugar needs in the United States?

Nature produces sugar in many ways — in flowers, in fruits, in stalks such as the corn stalk, the sorghum stalk, sugar cane, and in roots like the beet. Even the onion carries more sugar than any beet did 125 years ago. Sugar is found also in the sap of many trees, such as the sugar maple, and in the pods of many wild beans, like those of the mesquite of our Southwest, the carob of the Mediterranean countries, and the honey locust of eastern United States.

Doubtless man got his first sugar by stealing it (honey) from the bees.

Sugar cane. Many centuries ago men in southeastern Asia discovered that the juice of a cane, now called *sugar cane*, could be crushed out by ox power between crude rollers and that the juice, or sap, became sugar and molasses when boiled.

From Asia sugar cane was introduced into southern Europe, probably by the Arabs. The Mediterranean lands, however, with their dry summer climate were

ill suited to the production of a cane that needs to be kept growing all summer.

Sugar in the Western Hemisphere. For 250 years before 1750 most European countries valued most highly their sugar-growing colonies in the West Indian islands, Central America, and South America. Indeed, European countries valued these colonies much more highly than all the rest of North America. This was because these plantations sent them three prized luxuries: sugar, molasses, and rum (made from molasses).

Sugar cane in the United States. Long ago sugar cane was introduced into our Southern States. For a long time we have grown a few thousand acres, chiefly in Louisiana and in other localities near the Gulf coast. We can make as good sugar as any, but our winter is too cold and our summer is too short for sugar plantations to be as productive, acre for acre, as those in the full tropics, where the cane plant lives for years and can stand having the canes cut year after year.

Tropical sugar plantations. Just as a few potatoes are grown in gardens in nearly all parts of the United States, so a few sugar canes are grown for home use by the forest people and the farmers in nearly all tropic countries where there is enough rainfall to grow a forest or good grass.

Just as commercial potato production is centered in a few acres so is *commercial* cane growing. One reason for this is that the modern, efficient sugar mill requires a huge structure and costly machinery. Such expensive equipment must have the cane from thousands of acres in order to make it pay.

The great cane sugar producers for markets over the seas are Cuba, Puerto Rico, the Hawaiian Islands, the Philippine Islands, Java, and the little island of Mauritius in the Indian Ocean.



Fig. A. Boiling the sap of the maple tree to make maple sirup and maple sugar.

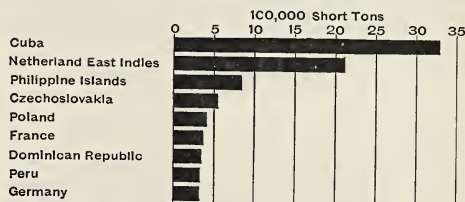


Fig. B. Sugar exports by countries.

Cuba leads all the rest for two reasons. She has large areas of nearly level limestone (therefore fertile) land. The Cuban climate also suits sugar cane perfectly—a long, warm, rainy season to make the cane big, a shorter dry season during which and the sap gets richer and richer in sugar, ready for the dry season (winter) harvest.

Improvements and the sugar glut. Sugar growing and sugar making have been greatly improved of late because scientists have studied the sugar *plant*, its *needs*, its *fertilization*, its *enemies*, and the ways to make sugar by machinery (*mass production*). As a result, the world market for sugar was oversupplied, just as was the world market for wheat. In 1933 there was a surplus of 2,500,000 tons, and the sugar growers of the world were trying to work out ways to reduce the crop so that they might raise the price enough to keep them all from going bankrupt.

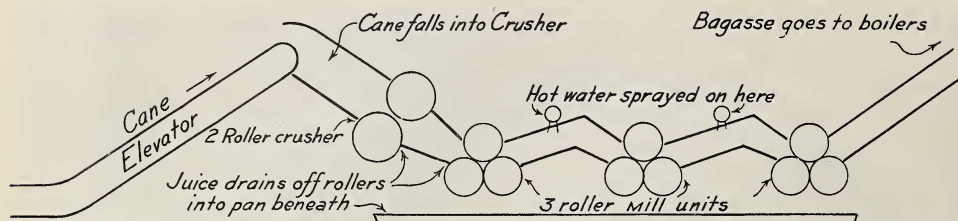


Fig. A. Cross section of cane crushers in a plantation sugar mill. It is 265 feet from left to right, and uses 2700 horse power when grinding at the rate of 4000 tons of cane a day.

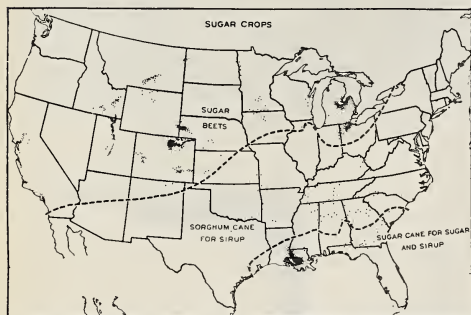


Fig. B. Each dot on this map represents 1000 acres planted to sugar beets, sorghum cane for sirup, or sugar cane.

Beet sugar. After supplying the world market for sugar for two thousand years, the sugar cane found a new rival in the nineteenth century. It was the sugar beet (page 122). This crop plant can thrive in the cool climate of north-central Europe where sugar cane is unknown.

The beet is a bothersome crop to grow (pages 135-137), requiring much work on hands and knees, but it fits well into the intensive agriculture of the small farmers of densely peopled lands like Belgium and her neighbors. Beets make a heavy yield to the acre. The soil is left fine and rich so that a splendid crop of wheat, barley, rye, or oats will follow. The pulp that remains after the sugar is soaked out of sugar beets makes good feed for cattle and dairy cows. Often it is dried and will keep for months.

Sugar can be produced more cheaply from sugar cane than from sugar beets.

But tariffs keep the cheaper sugar out of many European countries.

Beets in the United States. The sugar beet, like most other European crops, has been introduced into the United States. But the beet likes a cool summer, so it does not thrive in our Cotton Belt or even in our Corn Belt (Fig. 422-A). If you compare the sugar map of the United States (Fig. 450-B) with the corn map of the United States (Fig. 439-B), you will see that the beet-sugar area just skirts around the edges of the Corn Belt.

In the United States the sugar beet is especially important on the irrigated farms. There are several reasons for this. One is that irrigation is an expensive way of farming, and sugar makes a big crop to pay for it. Another is that irrigated lands have dry air which cools off quickly at night, so the nights are cool and therefore suit the beet, as in California. Another reason is that most of our irrigation is on the plateaus, such as Utah, Idaho, Colorado, Wyoming, Montana, and western Nebraska, where the nights are cool. Other beet-sugar areas are just to the north of the Corn Belt (Fig. 450-B).

Tree sugar. Sugar made from the sap of the sugar-maple tree in northeastern United States and southeastern Canada is the most high-priced sugar in the world. People like the flavor of maple sugar and maple sirup so much that they are willing to pay a good price for it.

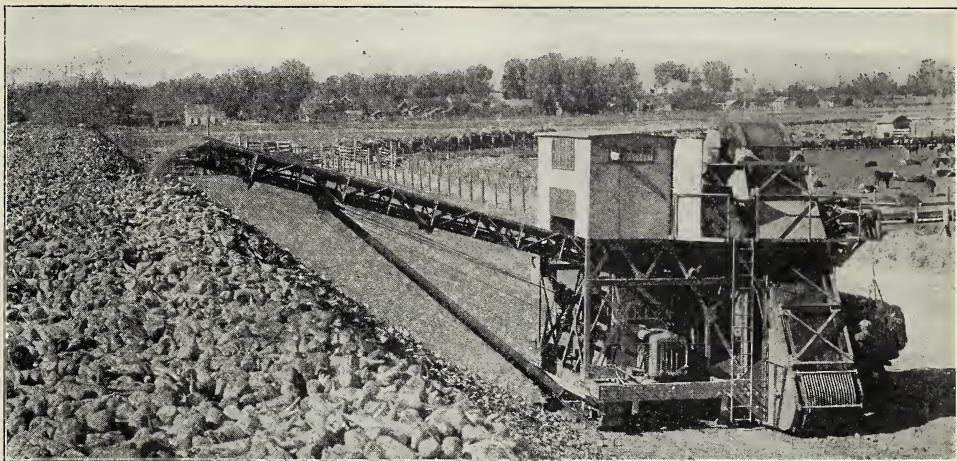


Fig. A. Mass production of beet sugar. This Colorado beet piler unloads a wagonload of beets in two minutes. In cool weather beets keep for weeks in a pile awaiting their turn at the refinery.

The Indians taught the European colonists to make maple sugar. In having this sugar tree, the Indian had something that the north European farmer of that day did not have.

Maple sugar is a luxury in the class with candy, but we have another sugar tree, not yet used, which holds the interesting possibility of becoming the most important sugar plant in the United States. The honey-locust tree produces its small, hard seed (or beans) in a large pod (Fig. 448-A). Sometimes the pod is packed with a sweet substance many times as heavy as the small beans. At least one of these trees has been found bearing pods fifteen inches in length, and beans from this tree analyze 29% sugar. This makes them richer than either sugar beets or sugar cane. While this particular tree grew in South Carolina, scions from it have grown in Connecticut and have withstood the climate there. The honey-locust tree grows all the way from the Atlantic coast to the Great Plains, from the Cotton Belt to southern Canada. Where corn fields and cotton fields are washing away at a most alarm-

ing rate, it looks as though we might easily grow great plantations of honey-locust trees on our hillsides and thus retain the soil. Honey-locust beans—which have long been eaten by boys, girls, cows, horses, and sheep—might not only make a sugar crop but, like the beet, yield also an important food by-product for the animals. There would be yet another by-product, that of wood, for the tree is a good timber tree. It takes years of scientific experimental work to make a new crop from a wild tree. Who will do this?

THINGS TO THINK ABOUT AND TO DO

A good review. An excellent method of reviewing what you have studied is to write a series of questions like the following:

Most of the sugar in the United States comes from:

(1) beets (2) cane (3) sorghum (4) maple trees

You notice that but one of the four answers is correct.

Exchange your papers with a classmate. Choose the correct answers to his questions while he is choosing the correct answers to yours.

Explaining a drawing. Study Figure 450-A and tell how the juice is extracted from sugar cane.



Fig. A. An almond grove in the Great Valley of California.

NUTS

☞ How does nut growing illustrate that man, with his intelligence, can improve on Nature?

Rich food in America. The kernels of walnuts, hickory nuts, and pecans are rich in fat and protein. The chestnuts and acorns are rich in carbohydrate but not so rich in protein.

Nuts were more important as food for the people in North America in the year 1500 than they are now. On the Pacific coast acorn bread was the standard food of the Indians. On the plateaus of Arizona and New Mexico the nuts of the piñon pine were, and still are, a very important food to the Indian. Throughout the forested East the acorn was commonly eaten, as were chestnuts and wild walnuts.

The decline and rise of nuts. As farming improved, forests were cleared and the use of nuts declined. But in recent years their use is on the increase again. The first to come into the new use was the so-called Persian, or English, walnut.

The Persian walnut. This nut, sold nearly everywhere in our stores, is probably a native of Persia. From Persia it has traveled completely around the world.

I have seen Persian walnuts growing in Japan, Chosen (Korea), China, the Himalayan slopes and valleys, Persia, Palestine, Syria, Asia Minor, Bulgaria, Yugoslavia, Italy, Switzerland, France, Spain, North Africa, Germany, England, Scotland, eastern United States, Ontario, and our Pacific coast.

While this tree grows to some extent in climates of humid summer, it thrives better in the Mediterranean type of climate. This is proved by the rapid rise of the English walnut industry of California. California furnishes almost all the walnuts grown commercially in the United States, although there are also thousands of walnut trees scattered over many Eastern States.

The American black walnut. The walnut family has many species. The one best known to the school boys and girls of America is the common American black walnut. This tree of dignity and beauty, fine wood, and good nuts grows wild over one third or more of the United States. Unlike many other nuts, the black walnut keeps its excellent flavor after being cooked. This species, which yields a large crop, is just in the beginning of commercial production. Good varieties have been found and a few orchards have been planted.

The pecan. The hickory group of the walnut family, like the walnut group, has many species. Most hickory nuts are small and the kernels can be secured only in small pieces. But one species—the pecan—shows us how new industries come. It was found that this species produced here and there a few trees with large nuts, thin shells, and kernels that could be secured in entire halves or even as “wholes.” By budding and grafting, orchards of these very fine varieties, in which every tree is like the parent tree

from which the buds or grafts came, are being grown in Georgia, Florida, Louisiana, Texas, and other parts of the South, and in Indiana. Two thirds of the crop, however, is still produced by wild trees.

The chestnut. The useful chestnut tree also has several species and will grow over as wide a territory as does the walnut. It will produce more bushels of nuts an acre than any frost-land nut tree with the possible exception of the oak. For more than a thousand years orchards of grafted chestnut trees have been growing on mountain sides in Italy, Spain, Sardinia, Corsica, and southern France. Imported chestnuts are for sale in the autumn in hundreds of American stores.

European mountain farmers use the chestnut for their own food and as food for domestic animals, just as corn is used for food for mountain peoples and animals in many parts of Appalachia, Mexico, and the Andean countries. While soil from the hill lands of Appalachia washes away after a few crops of corn, the chestnut orchards of the European mountains have stood with their soil intact since the days when Roman soldiers rested in their shade and ate sweet nuts.

The coconut and other tropic nuts. The coconut, the largest of all the nuts, has probably been used for food more than any other nut. The coconut grows on every wet tropic shore. It furnishes both fat and starch food to many a fisherman and hunter who has no garden or farm. In recent years coconut oil presses have been set up to crush the oil, which has become important for food and for making soap in America and Europe.

The Brazil nut grows wild in the Amazon forests, where most of the crop rots because there is no market for all the nuts.

The export of palm oil and palm nuts (page 291) has increased with great rapid-



Fig. A. This coconut-palm tree with its heavy burden helps to prove the statement that the tree is one of Nature's engines of production. What is the meaning of the saying "When his coconut trees come into bearing, he hangs up his hammock"?

ity during the early years of this century. This fact suggests future possibilities of using tropic forest land for producing things that man needs.

There are millions of acres of tropic forest that might become orchards of coconuts, oil palm, Brazil nuts, and many other trees whose nuts are not yet in use. In the same way there are even larger areas of land that might become orchards of pecans, walnuts, hickory nuts, chestnuts, and filberts if we need them.

THINGS TO THINK ABOUT AND TO DO

Ask me another. 1. What is meant by "budding and grafting"?

2. Why should our people learn to eat more nuts?

3. What are some uses of the coconut?

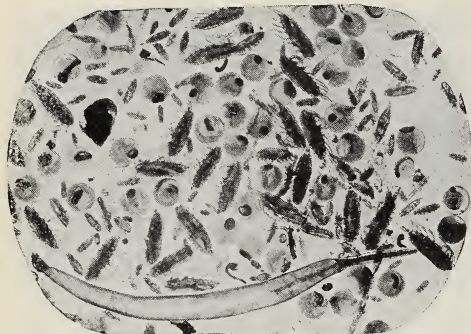



Fig. A. Read the paragraph, "Pastures of the sea" and then tell about this drop of sea water which has been photographed under a microscope.

THE FISH SUPPLY

 *Conservation* is to save, to use wisely, and to increase, if possible. What should be done to conserve the world's supply of fish?

Another wild food. Nature very kindly produces fish, and in most parts of the world all man has to do is to catch them. Naturally this was one of the earliest industries. It helped to keep the human race fed and clothed in the days before farming and flocks. Today there is no other produce from 143,000,000 square miles of sea, or nearly three fourths of the surface of the globe.

Pastures of the sea. The sea water may look clear, but sometimes it teems with life. Microscopic plants of many kinds, called *plankton*, support, directly or indirectly, all the animals of the sea. In some places as many as two hundred little one-celled microscopic plants, named *diatoms*, have been found in one drop of water. In other places not a single diatom is found to the drop. Countless billions of them are eaten by many forms of animal life.

A small sea animal about an eighth of an inch long, called the *copepod*, lives on plankton. Copepods are very abundant in some places. The herring fishermen

call them "red feed." Some zoölogist discovered that in the English Channel an extra amount of sunshine in February means large quantities of diatoms. These supply food for an unusual number of copepods in May, which in turn feed more than the usual number of mackerel in June.

Many fish swim with open mouths. Water goes into their mouths and out through their gills. The gills are like fine nets, through which the fish strain the water and so get small plants and small animals to eat.

There is some fishing on almost every seashore, but the heat of tropic climates spoils fish so quickly that tropic fishing is of little importance in *commerce*.

The rich North. If you dip a net beside a coral reef in some tropic sea, you may get many species of small animals. If you drop it in the Arctic, you may get ten times as many animals, but only one tenth as many species. It seems strange that the cold Arctic and sub-Arctic waters are richer in the quantity of plant life and of animal life than are the warm waters beneath the tropic sun. James Johnstone in his book, *Conditions of Life in the Sea*, quotes the scientist Kjellmann as saying, "One stands as before an insoluble problem when he makes a haul with a tow net in the Arctic, and obtains abundant and strong vegetation, and this at a time when the sea is covered with ice, the temperature is extremely low, and nocturnal gloom predominates even at noon."

Fishing banks. The shallow waters along the Atlantic coast of North America are called the *Continental Shelf*. If the water in the northern oceans is only fifty to two hundred feet deep, crabs and many other little animals can live upon the bottom. The valuable fishes that we call cod, halibut, and haddock come to eat these little fellows. Then along comes

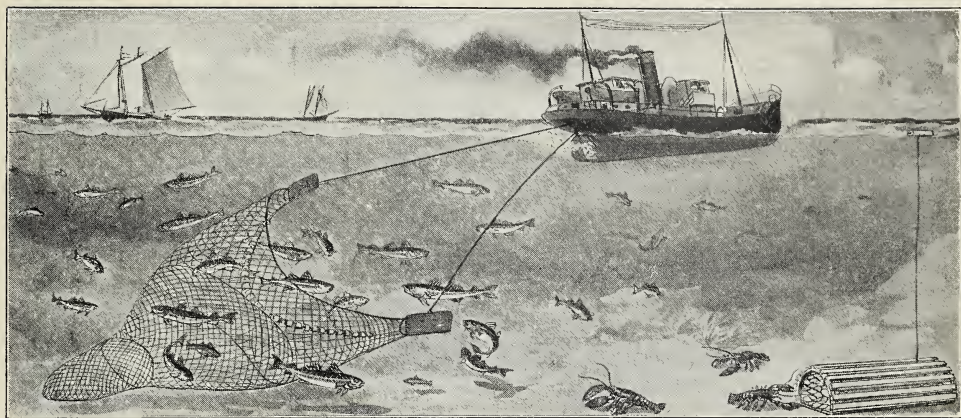


Fig. A. Catching cod on the Newfoundland Banks by use of a steam trawler and a trawl net.

man to catch the cod, the halibut, and the haddock.

The Grand Banks and fishing fleets. The really big news about the discovery of America was the report that there were good fishing banks along the coast. The report was true. We import much fish from Canada and Newfoundland. Scores of years before any European tried to make a home in North America, British, French, and Portuguese fishermen made annual journeys to the Grand Banks. These fisheries are still important to Europe.

France long ago lost her American colonies, but she still has two rocky little islands, St. Pierre and Miquelon, near the southern shores of Newfoundland. These islands are little more than fishing stations, convenient to the Grand Banks. By treaty France promises *not to fortify* these islands. They are part of her *economic* empire, but they are not a part of her *military* empire.

The fishing boats that work on the banks play an important part in the life of St. Johns, Newfoundland; of Halifax and Yarmouth, Nova Scotia; of St. John, New Brunswick; of Gloucester and Boston,

Massachusetts. Since 1880 these banks have yielded a billion pounds of codfish each year.

Newfoundland and Labrador. Fishing is more important to the people of Newfoundland and Labrador than to those of any other part of the world, for two reasons. First, there are so many fish, and, second, there is so little else that man can do. I visited one of the fishing schooners on its way to Labrador. The crew consisted of Newfoundlanders: ten fishermen and a cook. They lived in one little room in the front part of their boat, and in one little room in the back part. Between was the main hold, which they expected to stuff full of codfish, split and salted down, 1200 barrels of them, in about thirty days.

When brought into port, the fish are spread out on racks to dry after which the cod is about as hard as a board, will keep about as well, and can be taken to hot countries. A recent traveler reported that dried codfish was sold by the ton at Elizabethville, a copper-mining town in the Belgian Congo, where about 4000 white people and 30,000 Negro natives lived.

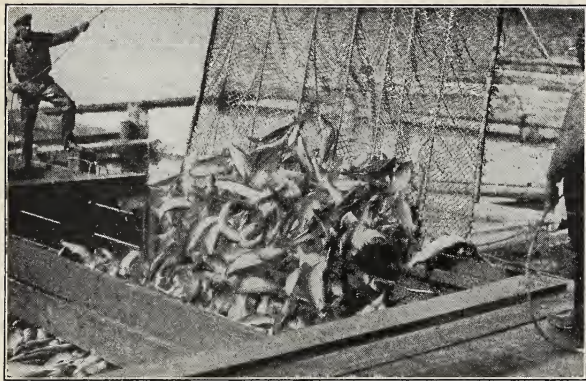


Fig. A. Mass production in the salmon industry. Nets, operated by mechanical power, dump their load of salmon into a scow. What does this suggest to you about the need for conservation of fish?

The fisheries of northwestern Europe. The English Channel, the North Sea, and the coasts of Norway and Iceland are fishing grounds that greatly resemble those of northeastern North America. It has been said that building ships and sailing out to fish has built up the navies of England, the Netherlands, Norway, and France.

For centuries the dried cod of northwestern Europe was shipped to the Mediterranean countries. To this day fish in bulk, canned fish, fish oil, whale oil, and fish meal rival forest products as the leading export of Norway. Fishing boats sail each season from Bergen and Stavanger in Norway; from Hull, Grimsby, and other ports in England; from Aberdeen in Scotland; from Shetlands; from Nantes and St. Nazaire and other French ports; and from all the ports of Holland and Denmark.

Fisheries in the north Pacific. The coasts of Japan, Kamchatka, and the other parts of northern Asia are much like those of New England, Labrador, and the near-by parts of North America in appearance, climate, and fish—even the varieties of fish. This helps Japan to be one of the great fishing countries of the world.

The coasts of Alaska and British Columbia resemble those of Europe in their climate and fish. Fishing is important there, but not so important as in Europe with its millions of people.

River fisheries. Some species of fish come to the rivers at the breeding seasons to lay eggs. Here the young are hatched and go downstream and out to sea, where they grow to adult size, and then return to the rivers to lay their eggs. Such are the habits of the shad and alewife (often called

herring) on the eastern coast of the United States, also the salmon. These fish ascend the rivers of eastern Canada and northern Europe, but it is in the rivers of British Columbia and Alaska that the salmon comes in greatest numbers. It is easy to catch these big fellows, weighing from five to fifty pounds, as they come in great schools. This large quantity of fish so easily caught give rise to one of our greatest fishing industries, that of canning salmon. Who has not seen canned salmon in the grocery store?

Other canned fish. Fortunately, while it takes a cold climate to dry fish, fish can be preserved by canning in almost any kind of climate. Thus the big tuna fish of southern California and the Mediterranean comes to market in little cans, as do several other species of little fish called, after they are canned, *sardines*.

The whale. Some whales are nearly a hundred feet long and weigh 150,000 pounds. They live in all oceans from the icy Arctic to the hot, equatorial waters.

In the floating factories in the south Pacific and Antarctic Oceans, however, it has become so easy to catch whales by modern machinery that this great animal is about to become extinct. In 1932 the United States and twenty-five other na-

tions signed at Geneva a treaty for the protection of whales. With his flesh good for food, his blubber good for oil, his skin good for leather, the whale needs to be protected by international treaties. Otherwise these great natural wealth creators would all soon be killed.

Fish culture. In China, Japan, and Europe fish are reared in ponds very much as we rear animals in fields.

Sea resources for the future. We know comparatively little about the sea and its life. If we knew more, the sea might be of greater use to us. For example, the airplane makes it easier for us to find those places, sometimes several square miles in extent, where fishing ships might do as the whales and mackerel do — scoop up quantities of little animals or fish. These fish could probably be made into human food in some form. If not, they certainly are good food for chickens and pigs, and for plants in the form of fertilizer. Menhaden, not good for food, and fish waste are used for fertilizer in Japan and the United States.

THINGS TO THINK ABOUT AND TO DO

Problems for those who like to think.

1. Fish is a chief export of Norway, Newfoundland, Nova Scotia, Alaska, and British Columbia. Tell the influence of kind of coast (smooth or full of bays), water offshore (deep or shallow), character of land (good for farming or rough and steep) on this export.

2. What laws has your state that protect its wild life?

3. Why are fish not so easily exterminated as fur animals?

4. England and Japan are two great fishing countries. Can you tell why?

5. In what ways does this chapter tell of your dependence upon other peoples? of their dependence on us? Are we worse off or better off for this dependence? Tell of some changes that would happen to them and to us if this dependence of one upon the other should cease.

6. "Fish helped to make Britain a sea power." How?

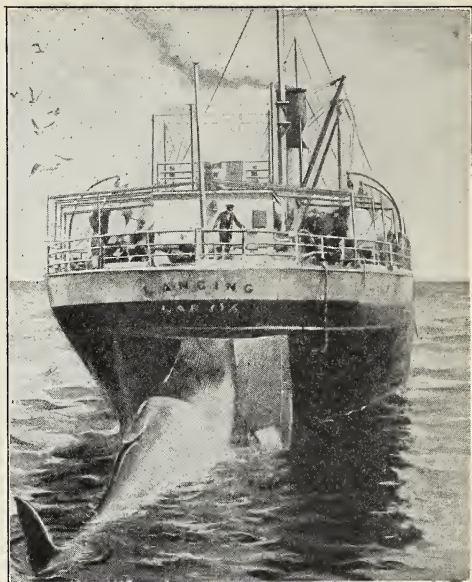


Fig. A. A whale being drawn into the open end of a "factory ship" — a floating packing plant.

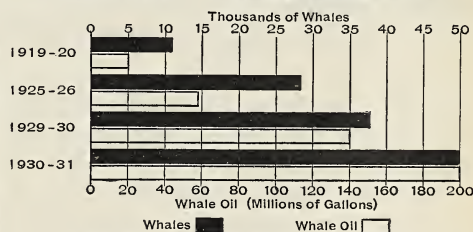


Fig. B. Tell what this graph shows.

MEAT AND EGGS

Why is the United States such a large producer and exporter of meat products?

Our abundant meat supply. Ever since America was settled, the people of the United States and Canada have eaten more meat than have those in Europe. This is true because there is so much land in America that meat is abundant and therefore comparatively cheap.

Animals of the grass lands. You have doubtless already learned in your study of geography that large areas of the world have so little rain that the land cannot be

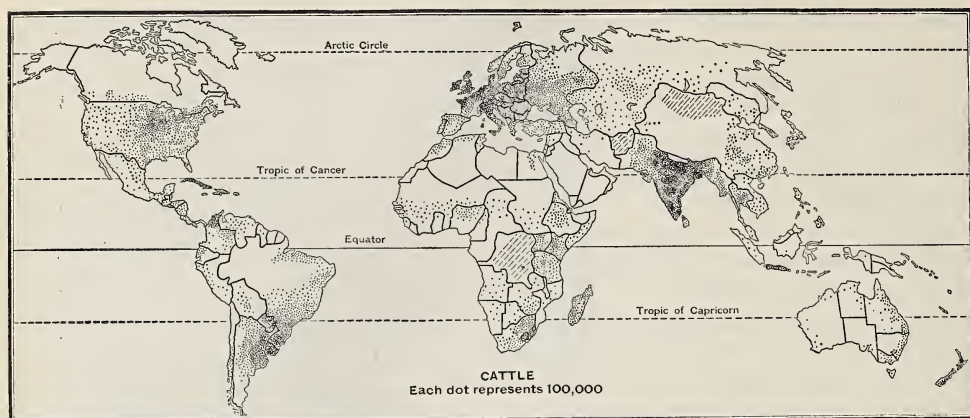


Fig. A. A world map showing distribution of cattle.



Fig. B. Value of meat products from leading exporting countries.

made into farms but is used only for grass and pasture (Fig. 422-A, numbers 4, 4A, 3, 2, 2A).

Now it so happens that meat is much better if the animal has recently been made fat. But only in exceptional places in these grass lands are the wild grasses rich and abundant enough to fatten the animals that live upon the ranges. At best these animals can be fattened only during a short season—the season of maximum rains and abundant grass. Because of this fact, the animals often live a part of their lives in each of two places. The *fattening* of meat animals is a leading business of the farms in the grain-growing or alfalfa-growing sections of four continents.

The Corn-Belt farm. Take the case of a typical farm in the American Corn Belt—Ohio, Indiana, Illinois, Missouri,

Iowa, southern Wisconsin, southern Minnesota, eastern Nebraska, eastern Kansas. A common arrangement of this farm would be: 40 acres in corn, 40 acres in clover pasture, 40 acres in hay, 40 acres in oats or wheat or barley. If it were a larger farm, there might be 80 acres of corn instead of 40 acres.

Three stages of intensity of farming.

We use the words *intensive farming* when much labor is put on a given amount of land to make it yield a large return to the acre. This typical Corn-Belt farm shows three different stages of intensity.

1. *The grain farm.* The farmer may have all of his land in grain and sell grain at the near-by railroad station. If he does this, he will have little work to do for nearly half the year.

2. *The meat farm.* The farmer may have cattle or sheep which would eat the grass of his clover pasture, the hay of his hayfield, and his corn or oats. Such farming, you see, is more intensive than the grain farm, because the farmer has to grow crops and also to take care of animals that eat the crops. In most years he would have more income from the sale of animals that eat his crops than if he had sold the crops.

3. *The dairy farm.* All would agree that farming on a dairy farm is more intensive than on a meat farm, because the farmer has to grow crops, feed cows, and also *milk them*. We shall study about dairy farming in the next chapter.

Corn Belt—Meat Belt. The Corn Belt might almost as properly be called the Meat Belt, because it has so many thousands of farms where meat is the main product. It grows hundreds of millions of bushels of corn and oats, but a very small quantity goes out of the country in which it is grown. It grows a much smaller amount of barley, very little of which is shipped out. These grain crops become the fattening food for the hundreds of trainloads of cattle that come from the grass lands to the west. They come all the way from Texas and Montana, from Arizona and Washington, and even from Mexico and Canada.

The Corn-Belt feed lot. These animals live upon the range until the framework of their bodies is built. Then—tall, lanky, and lean, and not very good for food—they are unloaded at the pens beside the hundreds of railroad stations in the Corn Belt. They walk out into the feed lots on the Corn-Belt farms. They spend a few months eating all they can of good grain and hay, and getting fat. From these animals comes the beef that we see hanging in the meat markets in a thousand American cities and towns.

What really happens is that in the autumn, winter, or spring the farmer sends the crops that he grew in the preceding summer to market in the form of meat. Therefore prime fat beef can be had any day in the year instead of at only one season, as would be the case if we depended only upon the grass lands.

Perhaps a Corn-Belt farmer would rather fatten sheep or lambs than cattle. For

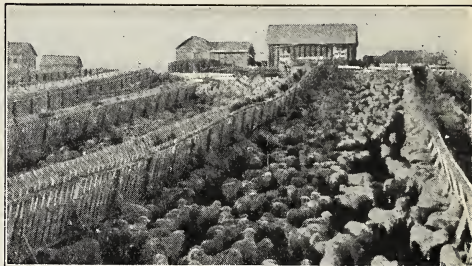


Fig. A. Long feeding racks for sheep in an irrigation district at the foot of the Rocky Mountains.

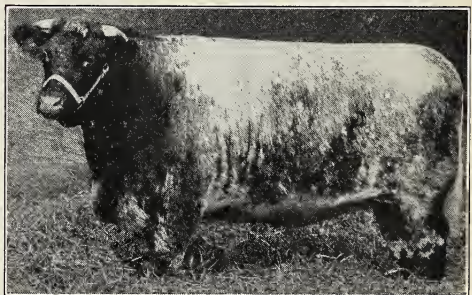


Fig. B. By careful selection, men have produced several different types of cattle. This shorthorn cow has been bred for beef, not milk.

such, there come each year trainloads of sheep and lambs from the ranges. These animals go by hundreds or thousands to the feed lots (Fig. 459-A) on the Corn-Belt farms for a few weeks of fattening.

The meat-packing plant. When the cattle and sheep are fat, they take their second and last railroad journey. The animals are not often slaughtered on the farms or in the little towns because slaughtering is an industry that requires *large-scale operation*. This is true for two reasons—there can be much division of labor whereby each man does only a small part of the work and becomes an expert and speedy worker; also, in large-scale production many by-products may be made. A large packing plant, such as we find at Chicago, Omaha, Kansas City, or St. Paul, is really a group of factories selling several hundred products, of which about one hundred go to drug stores.

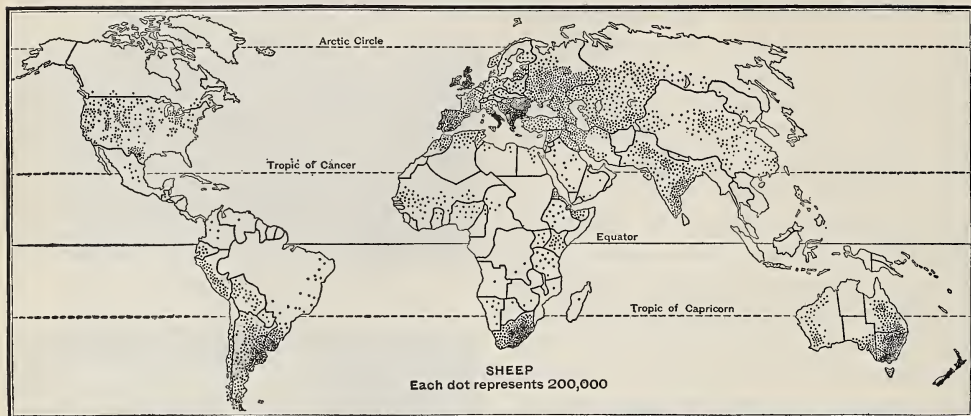


Fig. A. World sheep.

The world market for meat. The age of science and machinery has produced a series of inventions that have given us a world market for meat. After the railway and the steamship brought cheap transportation, the development of the art of canning meat made it possible for meat to be cooked in Chicago or Omaha, sealed in air-tight tin cans, and kept for a year or two, or until eaten in the homes, mining camps, and lumber camps of any great forest region, or the mining camps of any desert.

Next came refrigeration. The process by which we manufacture ice is also used to cool rooms, so that within an hour after the animal is killed a little trolley carries its carcass into the cold room of the packing plant for thorough cooling. Then, in an iced refrigerator car, the meat is carried from the Corn Belt to any one of a thousand eastern cities and towns or to the cold-storage plant by the docks at the seaport.

At the port it may stay a day or two or maybe three, waiting to be put into the cold chambers of the ship. Thus beef, chilled but not frozen, is taken regularly from the middle of North America to north-western Europe and to the West Indies.

Beef and mutton in foreign lands. The meat industry in many foreign countries resembles in many ways that in our own country. In the United States meat is produced chiefly in the Corn Belt (Fig. 422-A, region 11) and the Western grass lands (regions 4, 4A), although many meat animals are also kept in the Cotton Belt near the Gulf coast (regions 13, 14) and also in regions 9 and 10.

Similar lands, similar industries. In studying about fruit we found that the Mediterranean fruits and vegetables had spread to all parts of the world having the Mediterranean type of climate. In the same way the breeds of cattle and sheep from Europe have spread not only to the United States but also to South America, Africa, and Australia. In South America, notice on Figure 422-A that there is a region 11 (corn belt) next to a region 4 (grass lands) as in North America. Here we find the same kind of industry, the same kinds of cattle, the same kinds of wire fence, and in the cities the same kind of packing plant. Indeed, in Buenos Aires, in Montevideo, and in cities in Uruguay and Argentina along the Paraguay River, we find packing plants actually owned by the same companies that own

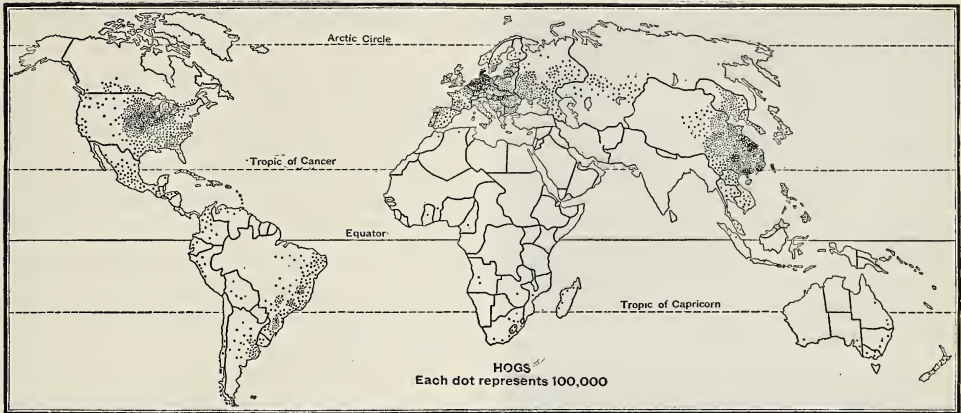


Fig. A. Distribution of hogs throughout the world.

plants in Chicago, Omaha, St. Louis, and Dallas.

Southern Brazil. In the ports of south Brazil these same companies own other great plants that slaughter animals which were born on the ranches in tropic grass lands (Fig. 422-A, region 2A) and were fattened on the corn produced in the coffee belt of Brazil, before proceeding to Europe in tin cans or cold chambers.

Australian meat. Australia is a continent of small and uncertain rain, without much good corn land, but with large areas of grass land. Now it so happens that sheep can live better on grass only — and poor grass, at that — than can cattle. Therefore in Australia there are many sheep. Some are sent frozen to Europe. But New Zealand is a greater shipper of frozen sheep, because it is a country of more dependable rain and better grass. Therefore New Zealand can fatten her sheep better. Many of the Australian sheep produce only wool and the carcass is sent to the “boiling-down” works to make tallow, bones, and perhaps tankage (cooked and dried meat used for pig feed).

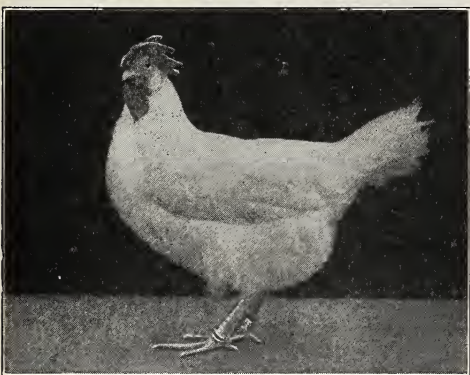
The exports of meat from the Southern Hemisphere have greatly reduced those from the United States.

European beef and mutton. The European corn belt is much smaller than our own, but the fattening of meat animals for export is an important industry in Hungary, Rumania, Bulgaria, and Yugoslavia.

Like our own Rockies, every mountain or upland region in Europe is a summer pasture from which young sheep or young cattle go down in the autumn to be fattened in some near-by farm land, perhaps even to eat grain imported from the Western or the Southern Hemisphere. Such upland pastures are to be found in the highlands of Scotland and Wales, of central France, of Norway and Sweden, both slopes of the Pyrenees, the Alps, the Carpathians, and the Balkans.

The hog. Hogs are forest animals. The same species as that of our common domestic swine is found wild in the mountain forests from Chosen to central Europe, and there are several allied species in the tropic forests of Asia, Africa, and South America.

In the forest the wild hog eats nuts, fruits, roots, and leaves. They need only small stomachs for concentrated food. Not only does the pig eat any kind of digestible vegetable matter, but also any



Figs. A-B. The big, heavy (11 lb.), lazy meat breed, buff cochin, which lays few eggs, and the small ($3\frac{1}{2}$ -4 lb.), industrious leghorn which lays many eggs.

kind of digestible animal matter — grubs, worms, snakes if he can kill them, and meat of any kind. He will eat some grass if nothing else is available.

You may search in vain for a herd of swine in the pastoral plains where sheep, goats, cattle, and camels may be found in thousands; but you will find them by the million where grain is cheap.

Hogs in the American Corn Belt. The excellence of the American Corn Belt makes it produce more corn, two or three times over, than any other corn belt in the world. This also makes the Corn Belt the greatest hog-producing region of the world. Some farmers choose to grow corn chiefly and feed it to pigs. When fat, the pigs are handled in the same pack-

ing plants that handle sheep and cattle; they are sent to market in the same way.

Pork from potatoes and barley. In northwestern Europe, where it is too cool for corn, potatoes and barley often take its place. If we add up the hog population of northwestern Europe, we find that there are about as many as in North America, because the small farms are intensively cultivated and hundreds of millions of bushels of potatoes and barley are grown for hog feed.

Poultry and eggs. In a certain sense we may say that chickens, ducks, geese, turkeys, and guinea fowls are but another kind of meat animal. Almost every farm has some poultry running around loose, catching bugs, digging up worms, picking grass here and there, acting as farm scavengers, and getting their living almost for nothing, for a part of the year. In some places poultry — mostly chickens — are kept by thousands very scientifically in houses under conditions as carefully regulated as those in a hospital. But most of the supply of both poultry and eggs in the United States and Europe comes from the small flocks on millions of farms. Fowls are most numerous where much grain is grown.

THINGS TO THINK ABOUT AND TO DO

Raising our meat supply. Make a chart that will show the principal foods of all the animals named in this chapter.

Make a talk about: 1. Science and the food supply.

2. By-products of the packing industry.

3. A farm that might be called a factory.

Special work for interested people. Explain: 1. Why New Zealand and Australia are adapted to sheep raising.

2. Why the Corn Belt is adapted to hog raising.

3. Why Denmark specializes in meat and poultry.

DAIRY PRODUCTS — MILK, BUTTER, CHEESE

What resemblances do you note between the dairy industry in the United States and that of foreign countries?

Milk. Milk is the natural food for the young of that very large class of animals called *mammals*. Even the seal and the whale are mammals. Man has taken milk for his own use from various animals, chiefly from the cow, goat, camel, mare, sheep, reindeer, and Asiatic buffalo. Only one of these animals produces milk in large quantities for large commercial markets, but each of the others is of great importance to some groups of farmers or nomads.

The cow. The cow gives the human race more milk than do all the other animals combined. This most useful friend of man came out of Asia with our migrating ancestors thousands of years ago. For many centuries her domain has included all parts of Europe except the Far North. After the era of exploration, Europeans took the cow with them to North America, South America, Australia, and South Africa. She is now at home on all the grass lands, corn belts, and small-grain belts of the world.

The location of dairies near cities. The people of every city wish to buy some fresh milk. Milk will keep sweet for a short time only, and therefore must be sent quickly from producer to consumer. Because of this fact, dairy farms have developed near every city. Now that we have refrigeration and express trains, it is possible to send fresh milk greater distances. Milk trains make runs of several hundred miles every day. The cream pitchers of Boston are filled with that delicious yellow fluid which comes in part from Minnesota, Wisconsin, and Kansas in refrigerated express cars.



Fig. A. This milk goat gave over 4000 pounds of milk in nine months. If a quart of milk weighs approximately two pounds, how many quarts did she give, on the average, each day?

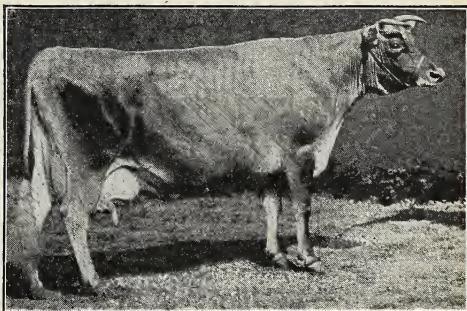


Fig. B. Cow of dairy breed — Jersey breed — from the isle of Jersey in the English Channel. This cow gave 16,657 pounds of milk and 740 pounds of butterfat in twelve months. Four pounds of butterfat make five pounds of butter. Compare her with Figs. 459-B and 463-C. To get the large milk yields and to spend his money wisely, the dairy farmer weighs the food for each cow so that she may get the right proportions and amounts of food elements.



Fig. C. Dual purpose cow. Picture taken in late July at 6700 feet elevation, at her cheese station. She wears her parade collar of ornamented leather, costing \$24; also the low-bass bell of the cowbell orchestra.

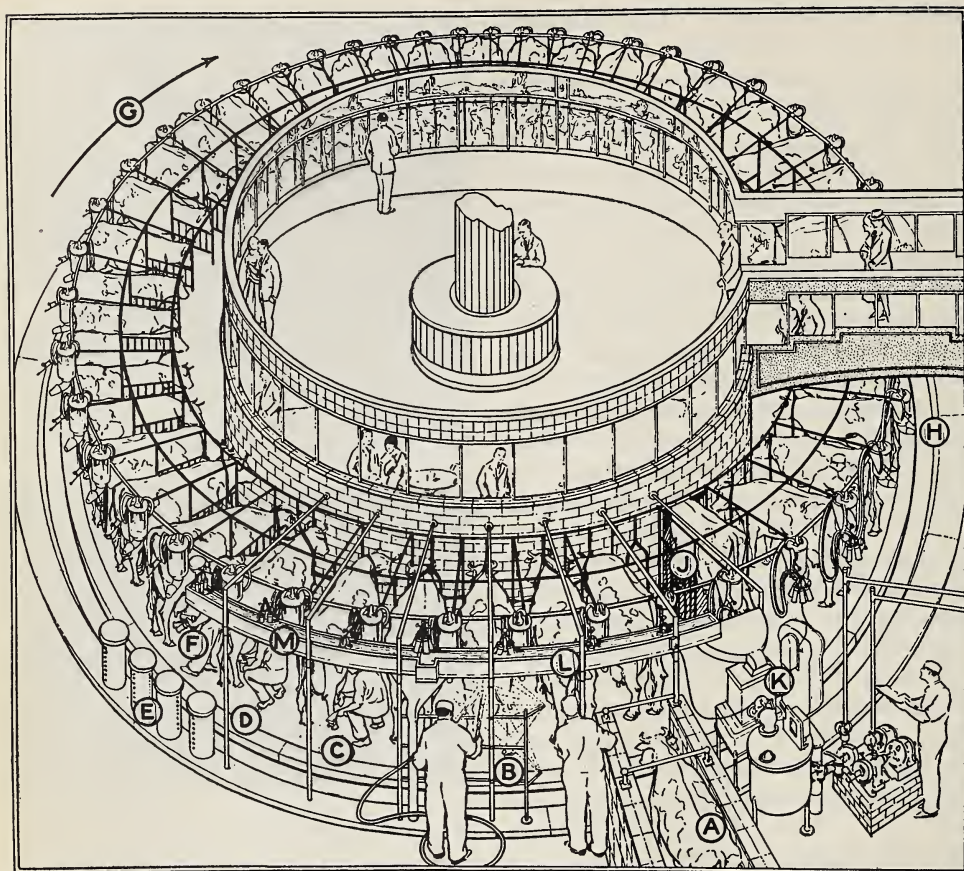


Fig. A. Mass production of milk. This huge merry-go-round of a thousand-cow dairy near Trenton, New Jersey, lets 39 men do work that had been done by 110 in the old hand way. The diagram shows how the system works.

- (A) The cows step onto the moving platform.
- (B) The cows are washed almost automatically.
- (C) Each cow's udder is wiped with two individual sterilized towels.
- (D) Milk samples from each quarter of cow's udder examined by drawing it on a fine-mesh copper strainer.
- (E) The used towels are placed in large cans.
- (F) The milking machines are attached to the cow.
- (G) The platform moves 15 feet a minute in direction of arrow and completes a revolution in 12½ minutes. By this time the cow has been milked, and the milk drawn into the large glass jars fastened to top of stall.
- (H) The milking machines are detached.
- (J) The clamp around cow's neck automatically releases itself, and cow steps off platform into passageway leading back to quarters.
- (K) The milk is automatically dumped from Pyrex jars, weighed, and piped to bottling room.
- (L) In this trough the milking apparatus and jars are thoroughly rinsed in cold water.
- (M) In this trough the apparatus and jars are sterilized by hot water before being used on another cow.

Note observation room for visitors, shut off by glass from milking room.

The users of this machine say that all cows should be kept in thousand-cow herds and milked this way.

Dairying in New England, the Middle Atlantic States, and eastern Canada. Here farmers have the two main reasons for keeping cows — great city populations eager for milk and farms not wholly suitable for the plow. Because the land is hilly, it should not be plowed frequently; because it is rocky, it cannot be plowed

easily — perhaps not at all. But cows can climb over rocks and hills and eat the grass. The grass is excellent because summer in this part of North America is cool and usually has enough rain to produce grass. Edible grasses do best in a cool rather than in a hot summer.

The Corn Belt and the spring wheat

belt. Dairying is more important on the northern edge of the Corn Belt than in the central parts for some of the same reasons that make it important in New England. Another reason is that the farmer has a long, cold season with little work that he can do. Thus the dairy farm is much more important in southern Wisconsin and southern Minnesota than in Iowa or Kansas. The wheat farmers on the edge of the spring wheat belt have begun to put up silos, grow alfalfa hay, and have herds of cows. This keeps them busy in winter. Thus much of the butter for the school lunch in New England, New York, New Jersey, and Pennsylvania comes in full carloads from Wisconsin, Minnesota, Nebraska, and the Dakotas. The demand for dairy products in the Eastern States is greater than their farms can at present supply.

Dairying in the Southern States. The Southern States have a long summer in which to grow cow feed, and the dairy industry has increased there in recent years. But much butter, cheese, and condensed milk are shipped from the North Central States and the West.

Dairying in the Western States. How many reasons can you give why a man with a small, irrigated farm in Colorado, Arizona, California, or some other Western state might go into the dairy business? Some of these irrigated spots now send butter to points east of the Mississippi River.

Cheese and condensed milk. These two concentrated products afford handy ways of getting milk to distant markets. A hundred pounds of milk makes from eight to fourteen pounds of hard cheese, depending on the kind of cheese. Much of the cheese comes from the same localities that produce butter. Sometimes the same neighborhood has cheese factories, milk-

condensing plants, and creameries for making butter. Milk is sometimes sent to market in the form of powder.

Dairy products in Europe. Europe, with a population several times as great as that of the United States and Canada, has the greatest demand for dairy products, the greatest dairy industries, and the greatest dairy trade.

Dairying in northwestern Europe. The cool summer weather of northwestern Europe makes better grass than grows in most of the United States. Also, there are the two main reasons for dairying — hundreds of cities with a population of more than 10,000 people, and many small farms. Small farms must be worked intensively to produce a living for a family, and dairying is one way of doing this. Dairying is therefore important in all the countries of central and northwestern Europe.

The United Kingdom is the largest butter importer. Butter comes by the million pounds from Australia, New Zealand, the Irish Free State, the Netherlands, and, above all, from Denmark (pages 155-156).

Denmark is sandy land much like Long Island or southern New Jersey — no coal, no oil, no water power, no iron, no copper, just sandy land — and that far from rich, but having a rainfall sufficient for crops. The people almost *have to be farmers*. What else can they do? By applying brains to business, the Danes have made themselves the most skilful dairymen in the world.

Other countries are copying Denmark's example. The farmers in southern Norway, southern Sweden, Poland, Latvia, Estonia, and Finland are all in situations resembling that of the Danish farmer and are following the Danish plan by turning more and more to dairying and the export of butter. The mountain pastures of

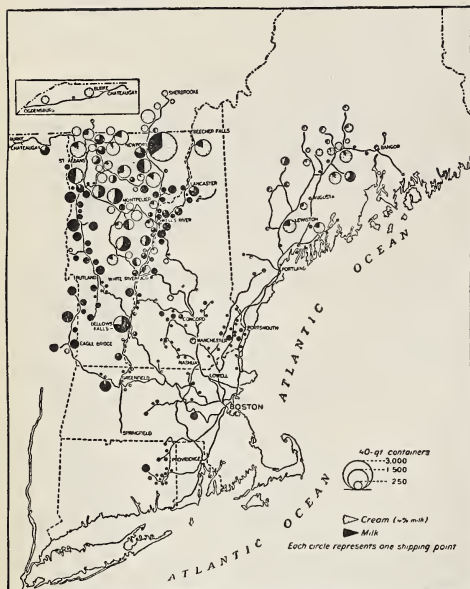


Fig. A. Boston milk and cream supply. How many states and provinces contribute to it? Why does milk come from near and cream from far?

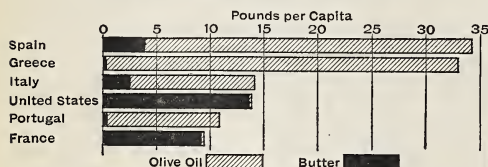


Fig. B. What does this graph tell you about the production of olive oil? of butter?

Switzerland, the French Alps, and the Jura Mountains make dairying important to that region. The people here ship much cheese and milk chocolate (pages 158-159).

The dairy industry in the Southern Hemisphere. New Zealand, so very far away from any market for farm produce, has good rainfall and excellent pastures. She has found that by sending butter to the mother country she can get cash to pay for the thousands of different things that a little country cannot make and therefore must buy.

Australia also exports some butter, but her irregular rainfall has kept the industry

from growing as fast as that of New Zealand.

The livestock industry of Argentina has been going through the same stages that we have found in our own country. First they produced meat; then they turned to the more intensive dairy. Argentina was for a time a butter importer. Then the dairies near Buenos Aires grew to the point where they supplied the home market, and now she has a considerable export of butter to Europe.

With all our great land area and our resources for producing cow feed, we do not export as much dairy products as little Denmark. Indeed, we actually import more than we export. If it were not for the tariff on butter, perhaps most of our butter supply would soon be coming from Europe and the Southern Hemisphere. This is because the dairy industry is not one that lends itself easily to mass production. Men feed cows by hand, they milk them by hand, or with a milking machine, and wages in America are still higher than they are in Europe.

THINGS TO THINK ABOUT AND TO DO

Influence. See how many different ways you can find in which climate, surface, and soil help or hinder man in the dairy business.

A freight problem. In the North Central States it costs 48¢ to send 100 lb. of butter, packed in tins, second-class freight for 100 miles. It costs 41¢ to send ten gallons of cream (weighing about 100 lb.) 100 miles. If you were a dairy farmer living in this section and could not sell your milk for city use, which would be the cheaper way to market your products, by sending butter or cream? How does this explain the location of many creameries? Explain the statement, "Distant locations produce concentrates," and give all the facts you can that help to prove it or disprove it.

Awarding prizes. We have some ribbons to give away. Blue, first place. Red, second place. White, third place. To what countries or states would you give them if you were judging them as dairy regions? Explain.

OUR RESOURCES FOR AGRICULTURE

Many localities near the Mediterranean Sea had much more good farm land and more people in Roman times than they do now. How do you explain this change? Does it have a lesson for the United States, and what is that lesson?

Great resources. The United States has great resources for agriculture *at present* and *for the present*.

Plenty of land. One of the finest truck soils in the world is known as *Norfolk fine sandy loam*. A strip of it reaches for hundreds of miles up and down the Atlantic coastal plain. A recent survey showed that we were using only about 1 per cent of this splendid soil.

There are enough almost unused hills along the Appalachians to supply several times the amount of peaches and apples that we need in this country or can sell in foreign lands. Similarly, there is much unused land ready for orchards of oranges and grapefruit in Florida, Texas, and California.

New land. Figure 467-A shows areas of land now too wet for farms but which might be usable if drained. The greatest area of undrained land is along the Mississippi River, where, if we wished, we might develop another Nile and make the floods fertilize the land as the Nile does.

Artificial fertilizer. In the last hundred years our possibilities of food supply have been greatly increased by the discovery of artificial fertilizers (Fig. 467-B). A few hundred pounds of chemicals on an acre often doubles, even more than doubles, the yield of a crop. We have great resources for fertilizer — *for the present*.

New crop plants from foreign lands. Figure 467-B shows a new kind of clover recently introduced from Asia. It is as tall as a man, and yields much more food



Fig. A. If these wet lands were drained, what crops might be grown on them?



Fig. B. Sweet clover growing at right of this picture is a newly introduced plant that rivals Sudan grass in increasing the productivity of land. It *must* have lime in the soil. The seeds of sweet clover and red clover were sown on all the land in the picture. On the left there is half a crop of red clover and no sweet clover. At the right, which had an application of ground limestone nine years before, there is a fine crop of both clovers. Farmers now test the soil to see whether it has lime.

for animals than the kind of clover we have been using for two or three hundred years. It is one of many new plants that plant explorers have found in foreign countries and have brought here for use in our own country.

Breeding new plants. There are two ways of getting new plants — one, by finding those that Nature made, the other by making plants that Nature did not make. Figure 468-A shows a hybrid — a plant with a mother parent of one species and the father parent of another species. *The offspring is larger than either parent.* Although this seems like a miracle, it is

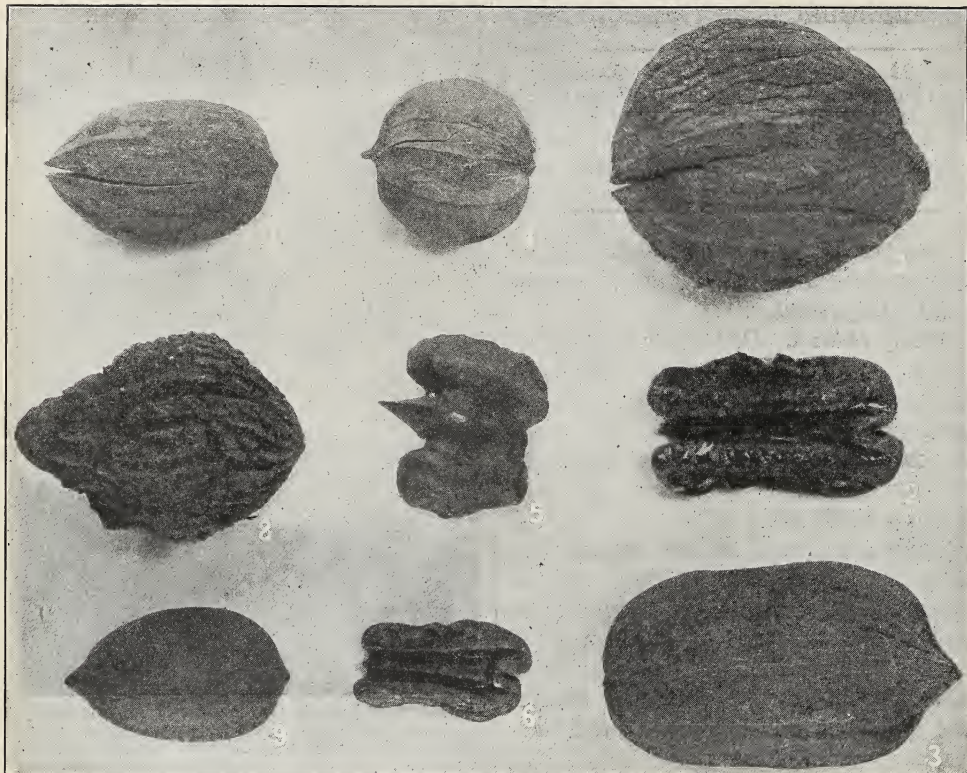


Fig. A. Some nuts that Nature has produced in America. By scientific plant breeding, man can probably do much better. 1, Thick-shelled western shellbark; 6 and 9, meat and nut of a fine Illinois pecan. You can crack it in your fingers; 2 and 3, a natural hybrid nut, cross of 1 and 9; 5 and 8, meat and nut of an extra-fine, thin-shelled American black walnut; 4 and 7 are other natural hybrid hickory nuts that yield kernels in complete halves. These hybrids are from parents selected by Nature's chance, not by man's intelligence.

true. This type of plant breeding can be applied in some form to many of our present crops. It can also make many new crops.

Breeding animals. In a short time we have increased the amount of milk produced by cows in the United States about 50 per cent, but the number of cows has increased less than 20 per cent. We have raised better cows.

The things I have listed in this chapter suggest the great possibilities of increased agricultural production, *for the present.*

Enemies for the agriculture of the future. Dr. Arthur E. Morgan, the head of the Tennessee Valley Authority, says

that in the hundred years that the white man has been living in large numbers in the Tennessee valley one half of the good agricultural soil has been ruined by *erosion*. This means that the land was cut by gullies and its soil was carried away by rains and running water. The people are now clearing new land on still steeper hillsides which are washing away still more rapidly (Fig. 469-A).

This destruction has not been limited to the Tennessee valley. It goes on on hilly lands in all parts of the United States, especially where corn, cotton, or tobacco are grown.

Why this great destruction in America? As I have traveled by automobile back and forth across England, Denmark, Germany, Switzerland, France, I have looked for gullies and found none. The European crops are nearly all grasses, or grasslike plants, such as wheat, barley, rye and oats. Such plants hold the earth with their roots. American agriculture has three crops almost unknown to north-western Europe—corn, cotton, and tobacco. These plants stand far apart. The ground beneath them is cultivated, loosened. This loose earth is readily carried away by the heavy rains. In north-western Europe nearly all the rainfalls are gentle showers which soak into the ground. In the United States most of the summer rains fall as thundershowers—suddenly, swiftly—and much of the water rushes away, carrying soil with it. You can see all this reduced to figures by this report of two days' rain in the erosion experiment station of the United States Department of Agriculture at La Crosse, Wisconsin.

Slope of ground, 16 per cent.
Rainfall 3.35 inches, June 30–July 1, 1933.

| PLOT NO. | CROP | PER CENT OF TOTAL RAINFALL THAT RAN OFF | TONS OF SOIL REMOVED PER ACRE |
|----------|-------------|---|-------------------------------|
| 2..... | Corn..... | 26.8 | 39.0 |
| 4..... | Barley..... | 30.5 | 1.4 |
| 6..... | Clover..... | 1.7 | 0.1 |
| 10..... | Grass..... | 0.0 | 0.0 |

Rainfall, 1.15 inches June 30, fell slowly, no runoff;
2.20 inches 18 hours later, hard shower.

How much rainfall ran off from the grass plot? the clover plot? the barley plot? How much soil was lost from each?

In the state of Illinois alone a recent survey shows that 3,000,000 acres of previously good land are gullied until they are fit only for timber; 3,000,000 more are fit only for pasture, and 12,000,000 are rapidly approaching the gully stage. Careful in-



Fig. A. The Redding Farm. See Figure 469-B to learn what happened to it. This farm once had the reputation of being the best upland farm in Muskingum County, Ohio. Now it is destroyed; it cannot be restored.



Fig. B. Map of the Redding Farm.

- 1—No erosion, 10-12 in. dark top layer intact (level upland).
- 2—Slight sheet erosion, 3-4 in. topsoil removed (comparatively level upland).
- 3—4-8 in. top soil lost by sheet erosion (moderate slopes).
- 4—8-12 in. removed, all surface soil gone and part of subsurface layer (moderate slopes).
- 5—12-18 in. removed, all surface soil and 6 in. of subsoil gone (moderate slopes, somewhat steeper than No. 4).
- 7—2-3 ft. soil and subsoil removed (moderately steep).
- 8—3-5 ft. soil and subsoil removed—severe sheet erosion followed by gully (steep).
- 8R—Reforested after cultivation and abandonment. Same disastrously eroded condition as No. 8, but has about 2 in. of leaf litter on surface (steep).
- 9—5-30 ft. soil, subsoil, and underlying soft shale rock lost by erosion, severe gully. Land permanently destroyed.
- 10—Flat, alluvial soil, timbered. Much soil and subsoil material washed from slopes above deposited over this bottom land, making it poorer than it originally was.



Fig. A. After lumbering in an American forest. Why are there no little trees left?



Fig. B. These foothills were once covered with a fine forest, then came the lumberman; then Figure A; then fire, another fire, yet more fires; and now? Many of our states have such scenes as this.

vestigation in the Tennessee valley this year showed that many farmers are continuing to clear and plant to corn and tobacco steep slopes—some slopes have a slant of 82 per cent. Farmers expect to abandon the land after five to seven years.

This matter of erosion shows how slow we have been to realize this vital truth: *one man's advantage may be to the injury of the country.* Thus, someone clears a forest, plants a field, and carelessly lets it wash away. He has fed himself for a few years, but he has ruined land that might with care be made to support a family for centuries.

Wind erosion. In the spring of 1934 people in New York, Washington, and many other Eastern cities saw for the first time a

strange, yellow haze. The haze was dust blown from the lands west of the Mississippi River. It darkened the sky over hundreds of thousands of square miles. Men had plowed and planted to grain land that should have been left permanently in grass in order to keep the wind from carrying it away.

The insect menace. We have brought new plants and new crops from foreign countries, and, without meaning to do so, we have brought many insects which destroy hundreds of millions of dollars' worth of property every year. Some of the new arrivals are the cotton boll weevil, San Jose scale, the Japanese beetle, the European corn borer. You can learn more about these enemy insects from bulletins which you can get from the United States Department of Agriculture at Washington.

We must work and plan now if this country is to have a great future.

THINGS TO THINK ABOUT AND TO DO

Some important arithmetic. An acre of subsoil one inch deep weighs 140 tons. How long would the top foot of the corn field last on the Wisconsin soil-experiment station field if it received six rains per year as destructive as the one mentioned on page 469?

2. How do the acres of soil already destroyed or injured compare with our total crop land of 350,000,000 acres, or the total area of such countries as the Netherlands, Denmark, England?

3. How long would our 350,000,000 cultivated acres last if we destroyed in each hundred years as much as we have already destroyed?

Extra credit. Write to the United States Department of Agriculture to secure information about: 1. New crops for the United States.

2. Dangers that threaten agriculture in the United States.

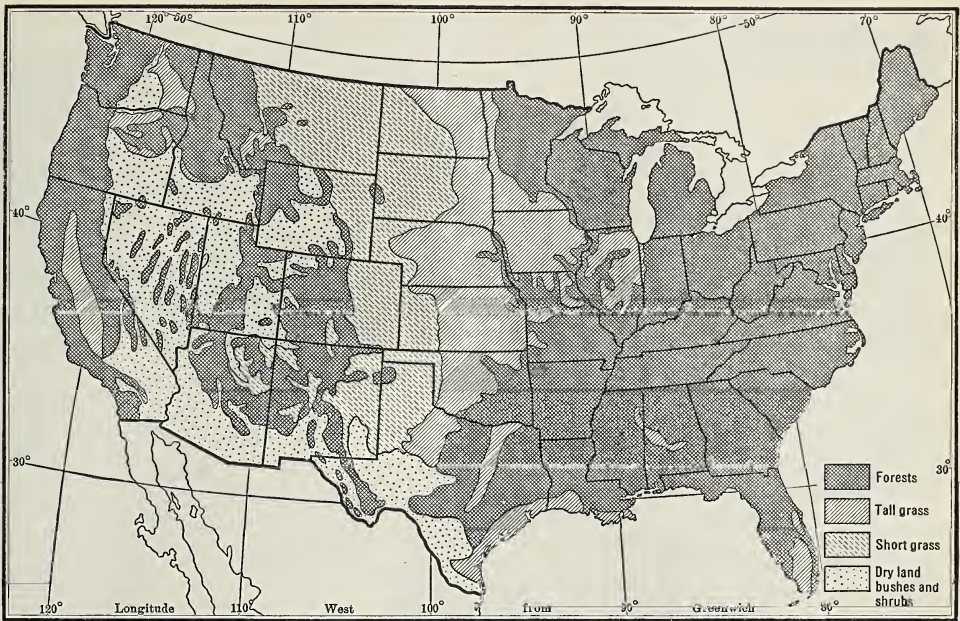


Fig. A. Natural vegetation. Two fifths of our area was once fine forests. Now half of it is gone and much of that which remains is second growth and badly burned. See Figure 470-B. How was your state?

OUR STOCK OF FOREST RESOURCES

☞ Which is the better practice: to “mine” our forest resources or to plant, cultivate, and harvest trees as a crop?

The importance of wood. What would happen to your house if all the wood should be withdrawn from it and no more could be had? In Sicily, where wood is scarce and people are poor, I have seen many houses with stone walls and stone floors, supported on stone arches. Stone houses are not only expensive to build, but are death traps in earthquakes. Make a list of all the uses to which wood is put near your schoolhouse. What would happen if the wood were not to be had?

The map (Fig. 471-A) shows that the European settlers along our Eastern coast landed in a great forest. No other impor-

tant country ever had such a splendid quantity or so great a variety of timber resources as had the United States when the white man first came.

Lumbering with the help of snow. In the Adirondack forests of New York, the highlands of New England and their continuation in eastern Canada, where the forests, mostly evergreens, extend for scores and even hundreds of miles on rocky uplands, snow has been and is a great aid to the lumberman.

The same kind of evergreen forests and the same kind of lumbering have gone on for many years in the upper Lake region — Michigan, Wisconsin, Minnesota, near-by parts of Canada — also in those parts of Ontario and Quebec that drain toward the St. Lawrence. There many pulp mills, paper mills, and sawmills exist.

Similar things in Europe. Similar

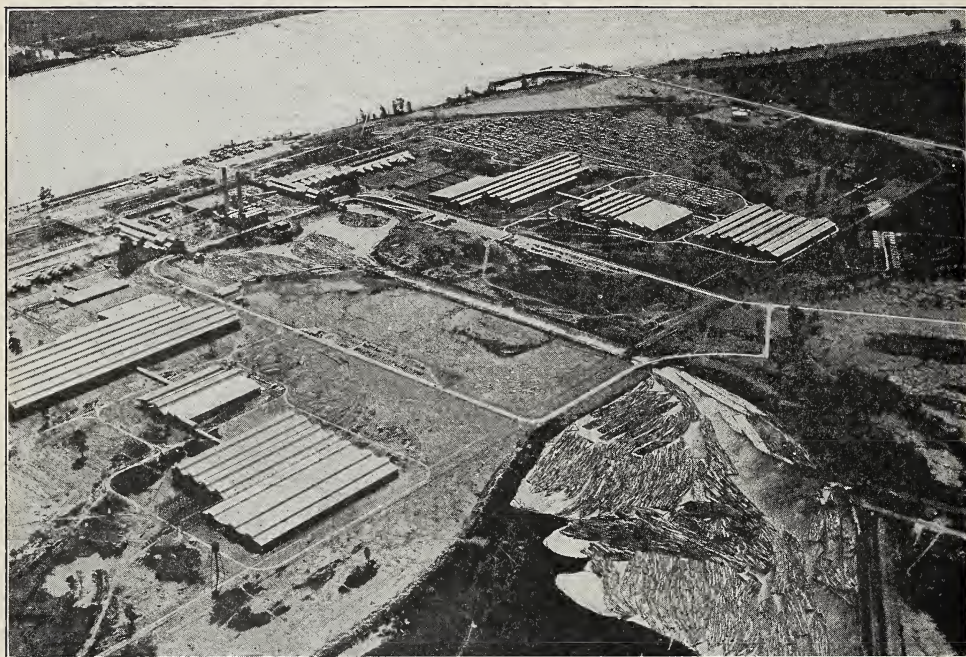


Fig. A. Mass production of lumber. A great lumber enterprise in Washington State owned by a company that expects to grow its own timber on its own land and keep this up permanently. Find the pond where the logs are dumped from cars, log canal, log-storage pond by mill, lumber piles, lumber sheds, wharf for ocean steamers.

climate and similar forests and similar lumbering are found in Sweden, Norway, Finland, Latvia, Estonia, Lithuania, and northwestern Russia (pages 164, 192, 204).

The Great Northern Forests of North America, Europe, and Asia. Region numbered 7 (Fig. 422-A) in Newfoundland, Canada, and Alaska, and also in Europe and Asia is a rough land whose fierce, cold winters and short, often frosty summers are unsuited to farming. But these conditions suit spruce, fir, birch, and beech. This great area has the snow for winter lumbering, but, unfortunately, most of its rivers run to the north, where the seas are hard to reach because of arctic ice. The Northern Forest is a great forest reserve for the future.

The forests of east-central United

States. A vast forest of broad-leaved trees, called *hardwoods* — oak, hickory, chestnut, walnut, basswood, tulip trees (poplar) — once covered southern New England, southern New York, most of the Appalachians, and the hill country to the east of it. Hardwood forests also covered Ohio, most of Indiana, southern Illinois, most of Kentucky and Tennessee, as well as the Ozark uplands. This rich variety of wood has been most useful to the people of the United States.

This central hardwood forest region rarely has enough snow for logging in the New England method. Logs are usually dragged or hauled from the stump to a little portable mill. The logs from a few acres are dragged to the mill and sawed. The sawmill is then moved to make lumber for another small area.

Nearly all these forests have now been cut over, and much of the forest has been destroyed by forest fires or by clearing to make fields or farms. In many states no one will pay taxes on the burnt land and therefore the states take it as state forests.

Similar forests in Europe. The countries of west Europe, north of the Mediterranean-climate lands (Fig. 422-A) and south of the Baltic, were once covered with a forest much like that of east-central United States. Europeans long ago realized how valuable lumber is. They knew that they would have to take excellent care of their forests in order to have enough lumber. Therefore timber is grown and tended as a crop. Large areas of land belong to cities, to states, and to nations; the forester in charge of the land is an important official. The trees are often planted as close together as we plant hills of corn, and many harvests follow. First, small poles are cut for palings and bean poles; then small firewood of smaller poles three to five inches in diameter; then larger poles five to eight inches in diameter; and, finally, a crop of saw logs. Then the cycle of timber production begins again with the planting of seedling trees.

The Orient. Japan and Chosen have forests much like those of east-central United States, and the Japanese government is doing the best it can to care for them; but, as in Europe, the supply of wood is not enough to supply home demand.

Lumber in our Southern States. A glorious forest once spread itself across the nearly level and stoneless plains from the Chesapeake Bay to southern Florida and from the Atlantic coast into eastern Texas. On the sandy plains were pine; in the alluvial lands along the streams were oak and gum; in the wet lands was the splendid cypress. Lumbering here is easy. A

temporary railroad can be laid through the woods. A donkey engine drags a log 1500 or 2000 feet to the train and loads it on a car, which can take the log many miles to a great sawmill. The finest wood in this forest is the so-called Carolina or hard pine, used for flooring and many other purposes. No wonder the Southern States have been leaders in the lumber industry.

Foreign forests in similar climates. In the similar climatic region of South America, Brazil has a large forest of timber known as Paraná pine — Paraná being the name of one of the Brazilian states. In Africa there are small areas of similar pines. Australia has a lumber export from her regions of these climates; but altogether the Southern Hemisphere forests are not so excellent as those of the United States. China has land with this kind of climate, and the mountainous part of it is largely covered with forests. The treeless north China imports lumber from the forested south China.

Our Rocky Mountain forests. We might say that the Rocky Mountains are islands of forest in a sea of grass. Their elevation causes the Rocky Mountains to have more rainfall and less evaporation than the adjacent lands, therefore forests of evergreens look down upon the treeless plains which surround them. Much of this forest land is steep and rugged. Logs cannot be floated down the narrow gorges of the streams; therefore much of the lumber stands in places from which it cannot possibly be taken to any market and there sold at a profit. Therefore, while these great forests are of important local use, they do not make an important part of the nation's lumber industry.

Similar forests, little used, are to be found upon the mountains of central Asia, of Anatolia, the Caucasus, and parts of the southern Andes.

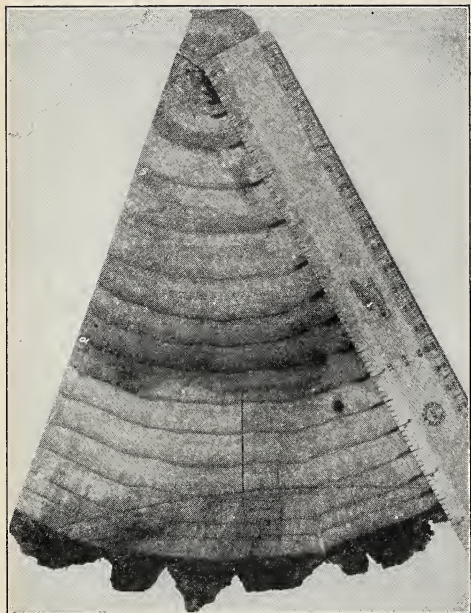


Fig. A. Part of cross section of a tree of one of the hybrid poplars widely planted as a shade tree in the United States. This particular tree grew at Rumford, Maine. In seventeen years it had reached a diameter of seventeen inches. Some tree hybrids produced artificially grow even faster than this one. This is one of the great hopes of forestry.

Forests and lumber on the Pacific coast.

The dry summer of the Mediterranean climate in southern California causes the land near the level of the sea to be without forests. Forests are to be found only higher up, as in the southern Rockies. But in northern California, Oregon, Washington, British Columbia, and southern Alaska the moist winds from the sea cause forests to come down to the shore. Here, in this moist climate where fierce winds are rare, we find the famous big trees of California—the largest and highest trees in the world—also the forests that lead all others in amount of lumber to the acre; also the greatest timber reserves in America, the greatest lumber industry in America, and the largest sawmills in America.

California is a lumber importer, but Oregon, Washington, and British Columbia have the greatest export lumber industry in the world. Lumber goes over the mountains to the Eastern States by thousands of carloads, and millions of feet go by ship across the Pacific and through the Panama Canal to countries on the Atlantic.

No foreign counterpart. No other part of the world has a forest like that of the Pacific coast, either in species or in amount of timber. The closest approach is some forests of eucalyptus in the similar climate of southeastern Australia.

Alaska. In southern Alaska the snow line gets lower and lower until it reaches the sea at Kodiak Island. The trees are much smaller than those of California. They are but little used at present although they are excellent for the manufacture of paper. Similar forests of small area exist in the mountains of southern Chile and New Zealand.

Lumber for the years to come. We are cutting timber in the United States about four times as fast as it is being grown. What is your state doing to aid forests? Your state forester, the United States Bureau of Forestry might help you in answering this question.

THINGS TO THINK ABOUT AND TO DO

The future supply of wood. 1. Make a careful study of what the United States Government is doing to improve forests. Get list of publications from United States Forest Service, Washington, D. C. Be sure to get this book, *A Forest Fire Prevention Handbook for School Children*, and send to the Canadian Department of the Interior, Ottawa, Canada, for *Historical Sketch of Canada's Timber Industry*, by James Lawler.

2. Do the same for your own state. Write to the State Forester at the state capital.

Extra credit. Explain how forests make trade because of differences in (1) rainfall; (2) temperature; (3) character of land surface; (4) density of population. Give an example of each,



Fig. A. The coal which we are now using was made from plants like those in this picture. The plants fell down into the water and were covered with mud. The mud hardened into stone. The plants changed into coal.

OUR STOCK OF FUELS

By using coal, the United States increased its population about thirty-onefold. Can coal continue to maintain this population?

KINDS OF FUEL AND THEIR IMPORTANCE

Our dependence on fuel. Make a long list of the uses of fire. Do not forget that fire helps to make things in factories; examples are iron, drying paper, smelting ores.

Fossil fuel. All coal, including peat, is sometimes called *fossil fuel*. Coal is the remains of plants that lived long ago and, luckily for us, have been preserved in a form useful for fuel. We may say that the machine age began when Watt's steam engine first pumped water and lifted fossil fuel (coal) from an English mine.

The coal age. Between 1790 and 1930 the population of the United States increased about thirty-onefold and the population of Europe about trebled. These increases occurred chiefly because men used coal.

COAL IN THE UNITED STATES AND CANADA

The lucky United States. Now that we have some idea of the great importance of fuel to the people in this age, look carefully at the table on page 476 and compare the United States with other countries and other continents. Our people are very lucky because our country is so very rich in coal, this most important of all industrial raw materials.

Where coal forms. Coal in its early stages of formation is peat, and peat is formed in swamps in cool countries. The wood and leaves fall into the water and decompose partly, forming a brown jelly-like mass which is preserved by the water of the marsh or bog and by acids in the vegetable material. Peat bogs are to be found in Ireland, Holland, Germany, Poland, Russia, Canada, and New England. Peat does not form in Cuba or India, nor in any other hot country, because, when vegetable material falls in *hot* climates, it rots and disappears. Therefore the tropic world has almost no coal. Very little coal exists in lands with a Mediterranean type



Fig. A. Tell what this map shows.

| Country | Production (million tons) | | | | Trade (million tons) | | Reserve (billion tons) |
|-------------------------------|---------------------------|------|------|-----------------------|----------------------|----------|------------------------|
| | 1900 | 1920 | 1931 | Tons Per Capita, 1930 | Im-ports | Ex-ports | |
| United States | 243 | 597 | 397 | 3.89 | 1 | 16 | 3,839 |
| Germany . . . | 150 | 252 | 252 | 4.40 | 7 | 34 | 423 |
| United Kingdom . . . | 229 | 233 | 222 | 5.28 | .. | 55 | 190 |
| France | 33 | 25 | 51 | 1.31 | 24 | 4 | .. |
| Russia | 15 | 6 | 50 | .. | .. | .. | 234 |
| Poland | .. | 7 | 38 | 1.25 | .. | 12 | .. |
| Japan | 7 | 31 | 33 | .. | .. | .. | 8 |
| Czecho-slovakia . . . | .. | 31 | 30 | 2.25 | 2 | 4 | .. |
| Belgium | 23 | 22 | 27 | 3.33 | 10 | 4 | .. |
| China | .. | 19 | 25 | .. | .. | .. | 996 |
| India | 6 | 17 | 24 | .. | .. | .. | 79 |
| Netherlands | .. | 6 | 13 | 1.54 | 10 | 8 | .. |
| Saar | .. | .. | 11 | .. | .. | .. | .. |
| Canada | 5 | 15 | 11 | .. | .. | .. | 1,234 |
| Union of So. Africa | 1 | 10 | 11 | .. | .. | .. | 56 |
| Spain | 3 | 6 | 8 | 0.31 | 1 | .. | .. |
| Australia | 6 | 13 | 7 | .. | .. | .. | 166 |
| Austria | .. | .. | .. | .. | .. | .. | .. |
| Hungary | 39 | .. | .. | .. | .. | .. | .. |
| Colombia | .. | .. | .. | .. | .. | .. | 27 |
| Austria | .. | .. | .. | 0.48 | 5 | .. | 54 |
| Irish Free State . . . | .. | .. | .. | .. | .. | .. | .. |
| Portugal | .. | .. | .. | 0.04 | 3 | 1 | .. |
| Greece | .. | .. | .. | .. | 1 | .. | .. |
| Denmark | .. | .. | .. | .. | 4 | .. | .. |
| Yugoslavia | .. | .. | .. | 0.37 | 1 | .. | .. |
| Argentina | .. | .. | .. | .. | 3 | .. | .. |
| Turkey | .. | .. | .. | 0.11 | .. | .. | .. |
| AFRICA | .. | .. | .. | .. | .. | .. | 58 |
| ASIA | .. | .. | .. | .. | .. | .. | 1,280 |
| EUROPE | .. | .. | .. | .. | .. | .. | 784 |
| OCEANIA | .. | .. | .. | .. | .. | .. | 170 |
| NORTH AMERICA . . . | .. | .. | .. | .. | .. | .. | 5,072 |
| SOUTH AMERICA . . . | .. | .. | .. | .. | .. | .. | 32 |
| WORLD | .. | .. | .. | .. | .. | .. | 7,398 |

Fig. B. Coal production, reserves, and trade.

of climate. Most of the world's coal lies in a cool belt between 35° and 60° of latitude.

Kinds of coal. Peat, the first stage of coal, when taken out of a swamp is a soft, brown mass of partly decayed leaves mixed with bits of partly decayed wood and bark. When peat is dried, it is much used for household fuel in Ireland, Hol-

land, and the Baltic countries.

Peat has been changed into several kinds of coal by pressure of earth upon it for a great length of time:

1. Brown coal, or lignite (peat somewhat compressed), exists in great quantities in the American Great Plains region and in northern Europe.

2-3. Semi-bituminous and bituminous coal are black and give out more heat than brown coal gives. The Germans found that for heating purposes four and one-half tons of lignite are equal to one ton of bituminous coal. In Germany large quantities of lignite and soft bituminous coal are pressed into lumps called *briquettes* (little bricks). The coal is held together with a little tar or sticky clay.

4. Anthracite. If a layer of bituminous coal and the rocks between which it lies are pressed and bent when mountains are being made, the pressure causes the soft or bituminous coal to lose its gases and tar. It then becomes hard coal, or anthracite.

Pennsylvania anthracite. The early American canal builders, knowing of the anthracite fields near Scranton, Wilkes-Barre, and Shamokin in Pennsylvania, built canals to carry the precious coal to New York, Philadelphia, and Baltimore. Soon after the canals were completed, the

first railroads were built. Half a dozen lines now carry anthracite coal to a hundred cities, and to boats in the harbors at Philadelphia, New York, and Buffalo. Anthracite is splendid coal for every purpose, and its location near the great cities of the East facilitates its use. But, alas, half of the supply is already used. This anthracite deposit comprises only about 480 square miles, all in eastern Pennsylvania.

The rich Appalachian field. The Appalachian plateau from northern Pennsylvania to northern Alabama consists of layers of rock that lie almost flat, like the pages of a book. Between the layers of rock are many layers of rich bituminous coal. In hundreds of places where streams have cut little valleys in the plateau the streams have cut through the coal. There mining it is very easy; one just digs into the hillside and hauls out the coal.

Central location. The rich coal supply of the Appalachian field is close to the Atlantic ports and close also to the Ohio and its navigable branches, the Allegheny, the Monongahela, the Kanawha, the Cumberland, and the Tennessee. Coal can be put upon barges and sent downstream to Cincinnati, St. Louis, and New Orleans, and to many other river cities. The Lake cities are only a short distance from the coal fields, so these cities have cheap coal as well as cheap iron.

Great length of coal formations. The Appalachian formations of rocks and coal appear again in the coal fields of Nova Scotia, and underlie some of the flat lands of Indiana and Illinois. Similar coal seams are found in Kansas and Iowa.

The Rocky Mountains and the Pacific coast. There are many small coal fields in the Rocky Mountains. Some of these are anthracite, and the coal from them is used locally. Unfortunately, the Pacific



Fig. A. The solid black areas on this map show the important coal fields of Europe.

coast, a part of which has the Mediterranean climate, has very little coal. California, however, is lucky enough to have a rich oil field instead.

Lignite, the great reserve. What does Figure 476-A tell you about the amount of coal in our Great Plains states? That is lignite, a reserve of fuel for future use. For mile after mile, county after county, great layers of brown coal — ten, fifteen, or thirty feet thick — lie there awaiting the time when the people of the United States will need it.

Canada has billions of tons of the same lignite formations that underlie our Great Plains, but unfortunately Canada has no coal supply between Winnipeg and Quebec. For this reason she imports large amounts of American coal.

COAL IN OTHER CONTINENTS

Look up "Coal" in the index and read again what this book tells about coal in the United Kingdom; in Germany; in France; in Poland.

Great Britain's early start. In the days before railroads, the coal mines of England produced several times as much coal as all the rest of Europe and America combined. This happened because, as the map (Fig. 477-A) shows, several of those

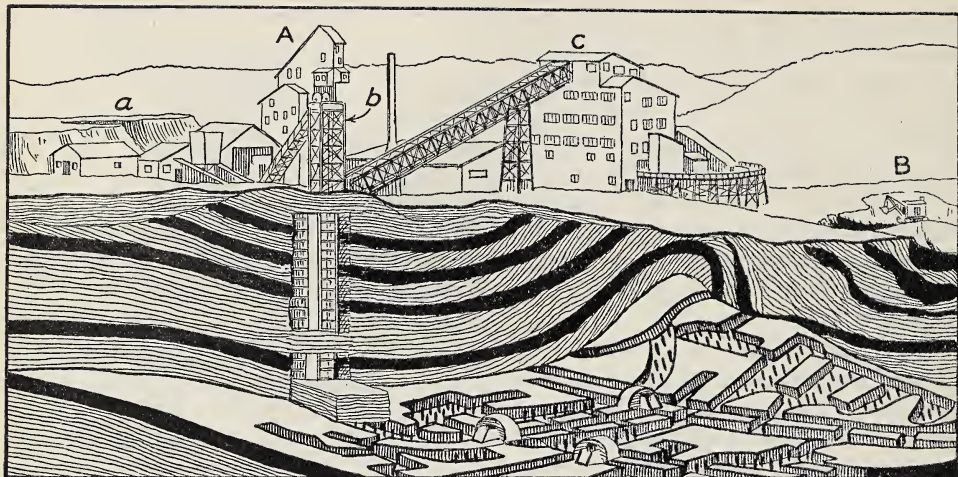


Fig. A. Mining coal. A, shaft mining. The shaft, as you see, passes through 5 veins (strata) of coal. In the lowest stratum the coal is being removed. See the tunnels, rooms, and roof props. *a* is a culm pile; *b*, the shaft elevator; and *c*, a breaker. At B the coal vein is on the surface and is being mined by use of a steam shovel.

coal fields were immediately beside water and could have cheap ocean freight. But now that railroads have come, the richer coal fields of America have taken the lead.

Unfortunately, British coal mines are deep; the seams are mostly thin, and much more work is necessary to mine coal than is required in Appalachia. For the last half century Britain has lived upon her coal in more ways than one. Much coal goes out as return cargo in boats that bring food and raw materials to her and would otherwise have to go out empty.

Study the table (page 476) and answer this question: Are the industries of England permanent? In making your answer, remember that we are now destroying a greater proportion of our agricultural soils each year than England is of her coal.

German lignite. Germany uses much more lignite than all the rest of the world combined. Improvements in the mechanical shovel have been made until now the electric shovel scoops up at a bite twenty to forty tons of sand, clay, gravel, or coal. The mechanical shovel has caused a great

increase of mining by stripping, both in the United States and in Germany—especially in Germany, where much lignite is mined in this way. It almost stunned me to stand on the edge of one of these holes and look into its vast size. The lignite is not taken away, but is used to feed super-power plants beside the mine. Thus it is converted into power, and the power is carried by wire to Köln, Leipzig, and many other cities.

Coal in China and Japan. If you recall the importance of foreign trade to Japan and look up her coal resources, you will see one of the reasons why Japan is so anxious to keep control of the coal mines of southern Manchuria, which are much richer than those of Japan. China has scarcely begun to mine her coal in this modern way.

Coal in the Southern Hemisphere. The Southern Hemisphere does not have much land in the coal latitudes. There is only one first-class coal field, that of Australia near Sydney. Compare its reserves with those of the United States. There are two

second-class fields in South Africa, while the whole of South America can hardly be called third class with only a few little mines with coal of very poor quality. The coal ships of Great Britain carry to Brazil and to Argentina the heaviest imports taken by those countries.

The best and newest fuels. Make a list of the uses of petroleum in its various forms, including gasoline. Have some older person tell you how many of these uses have been discovered since he or she can remember. What changes would result if all petroleum disappeared suddenly?

Fossils in a bottle. Nature very kindly bottled up, deep down in the rocks, crude oil and natural gas together, in much the same way that we have gas and liquid in a bottle of soda water. When the oil well drill goes through the rocks to the oil, the natural gas pushes the oil out in the same way that the carbon dioxide pushes the water out of the bottle of soda water.

Many products. In an oil refinery average crude petroleum produces 25 per cent gasoline, 10 per cent kerosene, 33 per cent fuel oil, 7 per cent lubricating oil, and 25 per cent heavy residue which may also be burned under boilers if desired. The use of oil for heating houses and for firing the boilers of locomotives and ships has reduced the demand for coal.

Use and waste. Natural gas is now carried in pipes from the oil fields to many towns and cities. We have all seen gasoline being used everywhere, and we are wasting it like pirates (Fig. 479-A and B). Figure 479-A helps to show why our oil fields do not last long, and why one state after another leads in oil production. We are the greatest oil producers in the world, but we have already begun to import oil.

It will probably not be many years until we have to get our oil from oil shale — rocks that contain enough oil to let us get

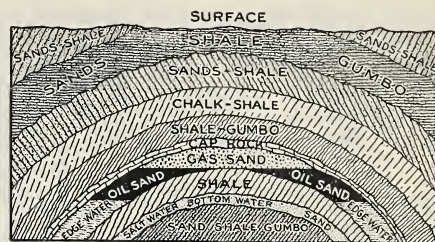


Fig. A. How oil and gas occur in the earth. Tell how you would get this oil and gas.

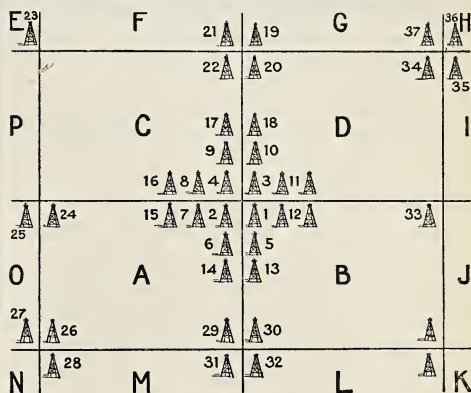


Fig. B. Oil waste. A, B, C, etc., are farms and farm owners. Oil is discovered by well No. 1. It will draw oil from several farms; so A rushes well No. 2; D, well No. 3. Can you explain why the wells are drilled in this order of their numbers? Each costs many thousand dollars, and five wells or possibly even one well would have got more oil in time than all of the many wells get. The oil industry needs a plan.

it out by heating the rocks in retorts. Most of the oil shale is in the Rocky Mountain region.

THINGS TO THINK ABOUT AND TO DO

Do you know? 1. What chemical action takes place when an object burns?

2. The meaning of "fuel," "crop fuels," "fossil fuels," "peat bogs," "coal age"?

3. Why there is little coal in the tropics?

National policy. Is coal mining a "robber industry"? Should people be allowed to mine coal wastefully? to burn it in wasteful heaters? to use it where water power might be used?

For extra credit. Secure from the United States Department of the Interior publications on petroleum, its formation, its production, and its uses. Make a report to your class.

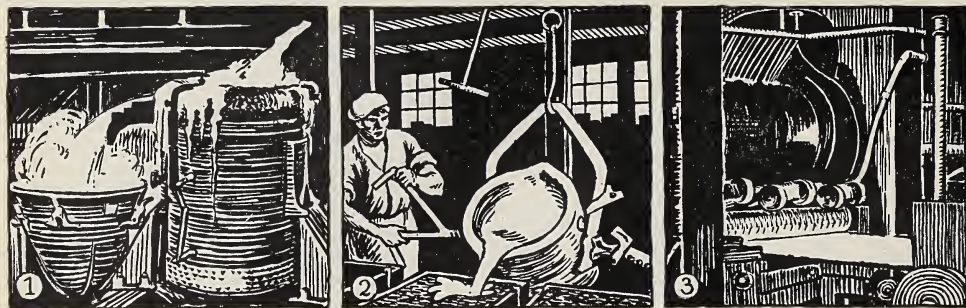



Fig. A. Steps in the making of steel: 1, white-hot steel pouring from a furnace; 2, pouring the steel into a mold; 3, rolling steel. A block of hot metal passes between the rollers and is flattened into sheets.

OUR STOCK OF OTHER MINERALS

 In what respects are we dependent on earth materials?

Uses and qualities of metals. Metals give man great power. The European people who settled this country had guns, knives, and metal tools. These possessions gave the settlers power over the Indians and enabled them to take the land of the Indians. The nations that use the most metal are the richest and most powerful nations.

Nearly all the metals can be melted and poured into molds in which they harden and take the shape of the mold. The number of *nonmetallic* minerals is much greater than the number of metals. Altogether we use hundreds of minerals.

Mixtures of metals are called *alloys*. Bronze is an alloy made of copper and tin. Alloys often have qualities unlike those of any other metal and they are *very* useful.

The marvelously hard cutting tools of the machine shop by which we can cut iron and steel are alloys of the very greatest importance in the machine age. Rustless steel is an alloy discovered recently.

The most important metal. Iron is the most important of all metals at the present time. Iron is important in each of the two things that make this age different from the

past in two main ways: by the use made of mechanical power and by our use of machinery.

1. Our use of mechanical power. George Washington had nothing to help him but the muscles of the men who worked for him and of the horses and oxen he owned, the sails of a sailboat, and the simple water wheel that gave a few horse power to the cogwheels of his gristmill and his sawmill. Compare the power of George Washington's six-horse coach with the power of an automobile. Today the American worker using machinery touches a lever which throws into work the power of a dozen men, a hundred men, a thousand men—sometimes of ten thousand or even a hundred thousand men.

Making mechanical power always uses metal. It always uses iron or steel (an alloy of iron) in boiler rooms, engine rooms, tubines of the hydroelectric plant, and the dynamos that turn the water power into electricity.

2. The iron machines. The machines that use mechanical power are also always made in large part of iron or steel.

Our riches in iron. Iron, as you already know, is made of iron ore melted with fuel (coal). Our country is rich both in iron ore and in coal to smelt the ore. Iron ore is scattered along the Appalachians from

Lake Champlain to northern Alabama. It is found in many places in the Rocky Mountains, but especially is it found in the very old rocks that form the hills near the south shore of Lake Superior, in Minnesota, northern Wisconsin, and northern Michigan. In your geography course you have already studied about the leadership of Pittsburgh in the American iron and steel industry and of America

in the world's iron and steel industry.

Other countries have good ore and good coal, but the American leadership has come chiefly through our extensive use of machinery. This has enabled us to use mass production more than any other country. Therefore we make more iron per worker—more by far—than any other country makes.

Mass production. The steam shovel, lifting tons at a time, scoops ore from the mines in the Lake Superior region. The shovel operator touches a lever and his marvelous machine grunts and pushes and grabs, almost as if it were human. I never tire of watching it. The single operator touches another lever and the machine swings around and drops its ore into a freight car. Presently the coal-driven steel locomotive, running on steel rails, pulls steel freight cars loaded with ore from the mine to the ore dock along the shore of the lake. The brakeman touches a lever which opens the bottom of a freight car, and the ore falls into a steel bin. Presently a steel ship comes alongside. At the touch of a lever, the ore bins on the dock open and the ore rumbles and roars down through steel chutes into the

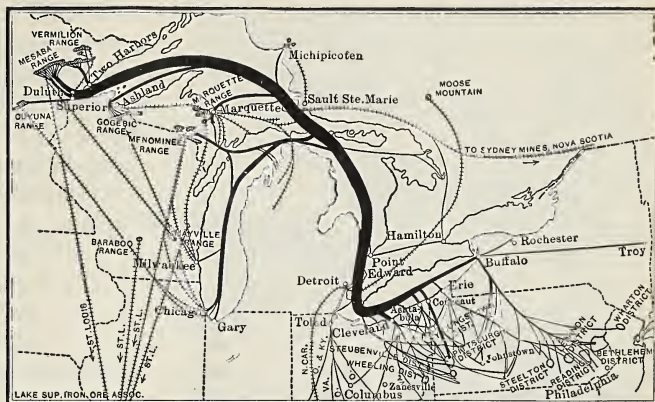


Fig. A. This map shows the movement of iron ore from the mines near the upper end of Lake Superior to the furnaces.

steel ship, at the rate of hundreds of tons a minute.

Almost as soon as the ship gets into port, she is loaded and starts for Cleveland or some other lower Lake port. There another steam shovel—sometimes called a grab bucket—reaches into the ship, as you would put your doubled hands into a pile of sand, lifts out tons of ore, drops it into freight cars, or on an ore pile to be stored for winter use.

At Buffalo, New York, and Gary, Indiana, the Lake ore steamer unloads its ore immediately alongside the blast furnace. Here hoisting machinery takes the ore to the top of the furnace, dumps it in, and soon molten material runs out at the bottom into little cars attached to a pony locomotive, which starts the molten steel on its way through the great plant. Presently the molten steel has cooled into an ingot—still white hot. This ingot is thrown upon rolls. The rolling-mill operator touches a lever. The machine throws this ingot to the left; another lever throws the ingot to the right; another starts it through the rolls where thousands of horse power mold it into steel rails or girders or beams or boiler plate or thin sheets for

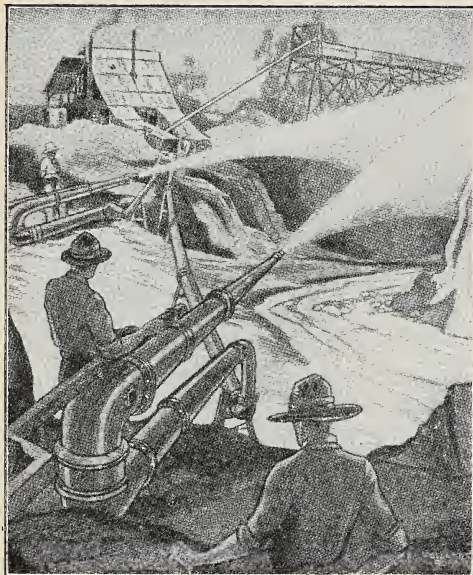


Fig. A. Placer mining. Water under pressure washes down gravel banks bearing gold, tin, or other metals. The metal is heavier than the gravel and sinks to the bottom in sluice boxes.

tin plates — into material for a thousand industries.

Untouched, with no man near the machine, the rails, girders, and plates move away from the rolls, because they lie on moving rollers, also controlled by the levers of the operator, who may be in a little cage near the ceiling. The finished stuff is picked up by a mechanical lifter, dropped upon a freight car, without ever having been lifted by human strength.

Some other metals. Copper comes next to iron in importance in this machine age. Copper is especially useful in electrical work. Perhaps you can make a list of uses of copper in your neighborhood.

Zinc, lead, and aluminum have many industrial uses. Gold and silver have many uses in the arts, and for coins.

Of all these metals we have plenty for a time. The supply of copper, lead, and zinc will last for decades; that of iron, for

generations. But sooner or later the mining industries will leave only empty holes in the ground. Tables in the Appendix tell where these minerals are mined extensively at the present time.

Conservation. Conservation of resources means using resources in the most *economical way* — and for *necessary purposes* — using them so as not to rob the people who come after us. We are now using our scanty supply of lead in making tubes for soap, cosmetics, shoeblacking, all of which might almost as well be kept in glass, which is made of sand. The supply of sand is limitless. Our scanty supply of zinc is going for metal roofing, for which we might use shingles and raise more trees, or tar, of which we have great quantities as long as we have coal.

Will the future regard this period as one of *progress* or as one of *waste* that robbed their generations of good things?

Cement and glass. These two earth materials are unlike the metals in that their material is really very abundant, except that they both need fuel — in the case of sand, to melt glass; in the case of cement, to burn shale and limestone. Cement materials are found in nearly all parts of the country, therefore we have a cement industry scattered in all parts of the country, so that this heavy product does not need to be carried far to meet the needs of all the people.

THINGS TO THINK ABOUT AND TO DO

A museum. Start a class museum of minerals. Add to it from time to time such products that you have and will lend to your class.

I speak. Think of as many metals, non-metallic minerals, and building stones as you can and prepare a list. Choose one member of your class to represent each earth product in the list. Find as many facts as possible about each mineral product and then have a series of short speeches beginning:

I am gold; I am granite; etc

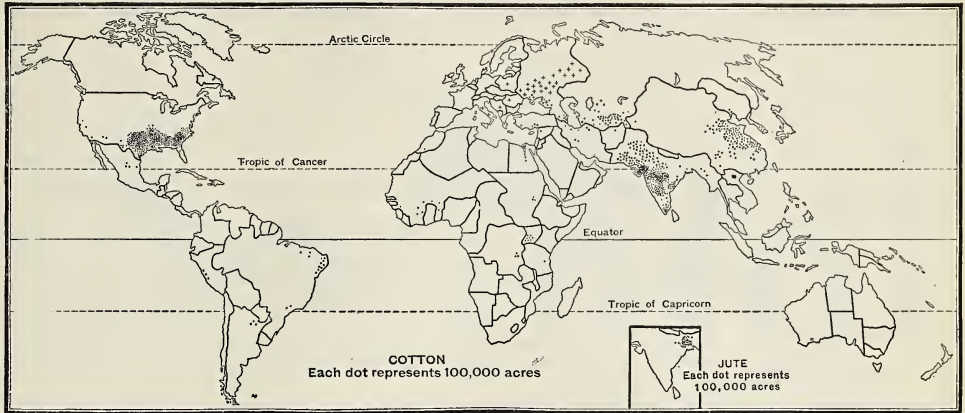


Fig. A. World distribution of cotton and jute.

OUR STOCK OF FIBERS

☞ King Cotton said, "I made a revolution." What did he mean?

If you reach into a haymow or into a pile of dry grass, or even of excelsior, take hold of it, and begin to twist and pull, you will make a coarse rope. You will also see a crude process of spinning, which led to weaving and has developed into one of our greatest industries — the clothing industry. No one knows whether the first yarn was made of wool or of the fibrous bark of some tropic tree, for spinning and weaving are *very ancient* arts.

Four classes of fiber. There are four main sources for fiber:

- (1) animal fibers, such as wool and mohair;
- (2) plant seed fibers, of which cotton is the chief;
- (3) plant stalk fibers — flax, jute, sisal, abaca, hemp;
- (4) insect fibers — silk.

Exports and imports. In the matter of the fiber supply we have one great export — cotton — and a long list of imports, — silk, wool, flax, jute, sisal, abaca.

Cotton. This plant is a native of the tropic world. It will grow in almost any part of the tropics where forest or good grass grow, and the plant will live for years if the dry season is not too long.

Yet, strange to say, most of the world's production for more than a hundred years has been in the southeastern part of the United States, where there is frost every winter. The cotton plant, when several years old, gets long and sprawly, and does not produce much fiber. In the continuously warm tropics many insects bother the plant. Thus the frost of the American Cotton Belt is a great aid, because it cleans out many pests, thus giving the farmers a fresh start.

You have already read about the production of cotton in the United States. The abundant summer rains of our eastern Cotton Belt have in a short time caused enormous soil destruction, and we have kept up our large production by moving on to new lands to the west. Within a short time there has been opened up a large new cotton field in western Texas, in land which people once thought unsuitable for cotton. There is no more new land to which cotton can be moved.

Cotton in foreign lands. Because European countries do not like to be so dependent upon us for cotton as they have been, several of them, especially England, have tried to develop cotton growing in Nigeria, Egyptian Sudan, and other coun-

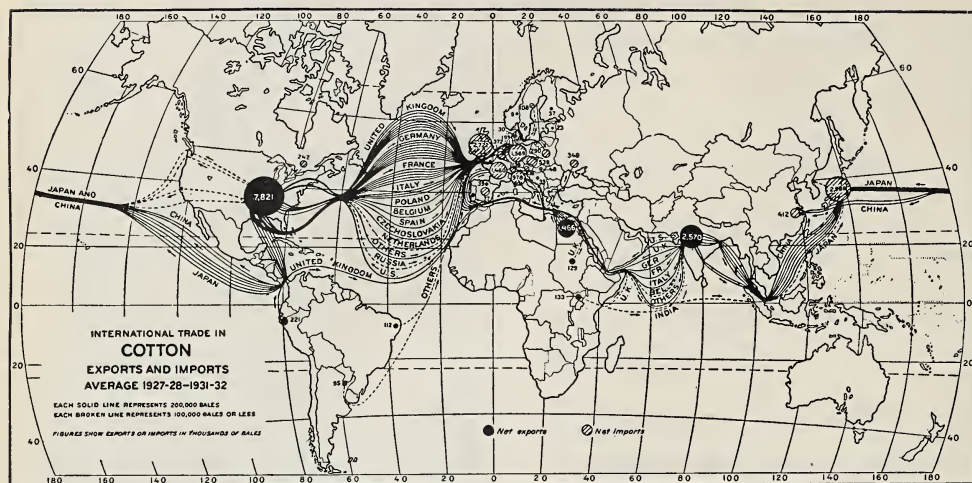


Fig. A. A cotton trade map showing exports, imports, and trade routes.

tries. Foreign cotton production has been gaining on us in recent years, though we are still many times over the greatest exporter of cotton.

Special kinds of cotton. For the manufacture of automobile tires a cotton with very long fibers is needed. This type grows especially well in Egypt; so, despite our large cotton export, we also have a cotton import. Peru sends us a brown cotton that looks much like wool and mixes well with wool in certain kinds of fabric.

Wool. We have millions of sheep, but we import hundreds of millions of pounds of wool every year, because the American people use much wool in clothing. We must import wool to get enough, and we also import it to get special qualities. From the *wool sheep* of Australia (Fig. 337-B) we get wools for our finest cloth. On the other hand, carpet requires the coarsest wool. We do not grow such poor stuff in the United States. We import wool for carpets by the millions of pounds from Mongolia and other odd corners of the world where the people do not breed sheep for special purposes.

The plant stalk fibers. If you take a stalk of straw or hay, or any common weed, and break it up carefully, you can see fibers in it. The stalk fibers of plants vary in quality, and we make much use of those from at least five plants, namely flax, hemp, jute, sisal, and abaca or Manila hemp. In each case it takes labor and a special process to get the fibers out of the stalks.

In the days before the cotton gin and the cheap cotton which it made possible, flax fiber, cheaper than cotton, was used for making linen cloth. Flax and linen were second to wool in importance among fabrics. In George Washington's time a little patch of flax was grown on almost every American farm, for the plant grows well in the United States. The cotton gin made cotton cheaper than flax, because flax has to be won from the stalk by a laborious process of wetting and rotting. Flax is now produced in European countries along the Baltic Sea, where labor is cheap and the climate suits flax especially well.

Jute, sisal, and abaca—three tropic

plants — are all treated in other parts of this book (see Appendix). All are used for cordage, and not a plant of any of them grows in the United States outside of a greenhouse.

Silk, the work of an insect which might be called one of man's very small cattle, produces one of our most expensive imports. We might grow silk in this country — but read about its production in Japan and then tell why we do not.

Rayon. The newest thing that has happened in the textile world is the way in which man has copied the insect's art. The silkworm chews up leaves of the woody structure common to nearly all plants, which is called *cellulose*. He digests it and makes a cellulose jelly in his head. It somehow pushes out through a little hole and dries into a thread. The chemists have taken cotton, chemically digested it into a cellulose jelly, pushed it out through a tiny hole in glass, and dried it to make artificial silk. Rayon is still a little different from the genuine silk, but at any time it may ruin the silkworm industry completely. We have many large rayon plants in the United States.

THINGS TO THINK ABOUT AND TO DO

Fill in the following table:

| NAME OF FIBER | GREATEST PRODUCERS | HOW PREPARED | USES |
|---------------|--------------------|--------------|------|
| | | | |

Finding explanations. 1. How machines have opened new fiber resources to man.

2. Why the United States is not a great silk producer.

3. Why the United States is the world's greatest producer of cotton.

Answer these questions by using your

UNITED STATES COTTON EXPORTS BY COUNTRIES

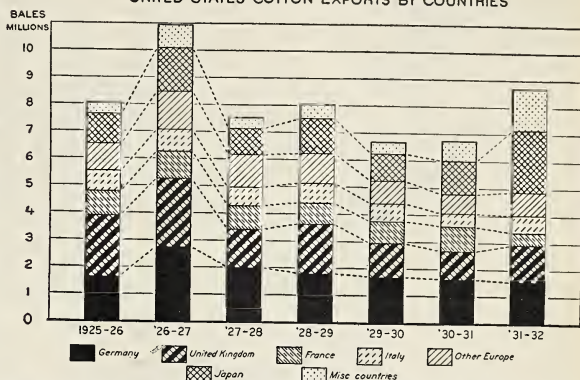


Fig. A. Exports of cotton from the United States usually comprise somewhat more than one half of the total crop. The principal export markets during the last five years were Germany, Great Britain, Japan, France, and Italy. A considerable portion of the cotton exported to Germany is reexported to other European countries.



Fig. B. Flax fiber. In ten years, by selecting the best each year, a new variety was produced yielding one third more fiber than the parent (top). The two grew in the same field. Name some other plants that might be benefited by the process of selection.

class copy of the *Statistical Abstract*, the *Yearbook*, U. S. Department of Commerce, or the *Yearbook*, U. S. Department of Agriculture. 1. What state produced the most cotton in latest available year? How much more or less than the 1900 crop was the crop for latest available year?

2. What states have lost in cotton production between 1900 and present time? Which ones have gained?

3. Compare the United States' importation of jute and jute products for the years 1928 and most recent year available. Can you explain the difference?

4. Study *Yearbook, United States Department of Agriculture*, table and make graphs showing leading producers of flax fiber and of flax seed. What do you notice about the climates of the areas producing these two flax products?

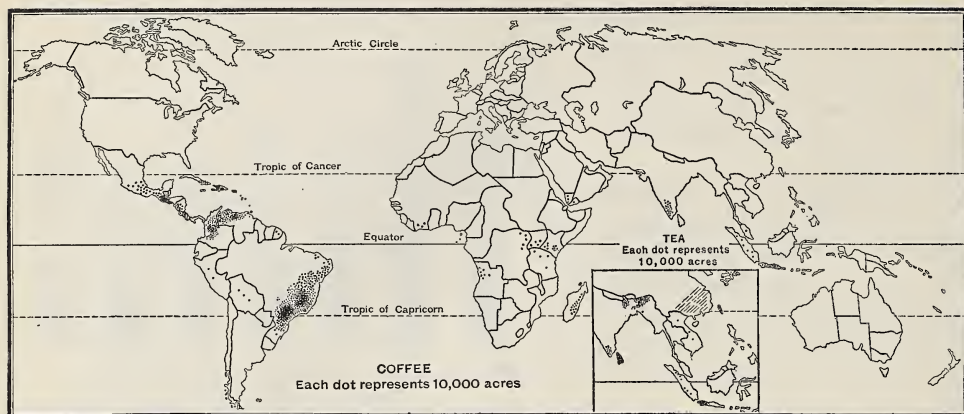


Fig. A. World regions producing coffee and tea. The parallel lines on the tea insert map mean that tea is grown but the amount produced is not known.

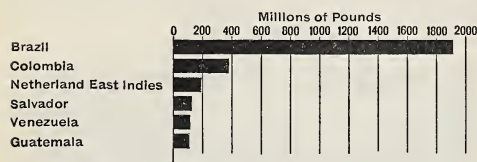


Fig. B. Leading coffee exporting countries.

OTHER RAW MATERIALS WE MUST BUY

Why should the United States be a good neighbor among the nations of the world?

Our Independence (?). As I have already said, no other nation can supply so many of its needs as the United States, yet we need to import many things to remain as comfortable as we are now.

In addition to wool, silk, flax, and special cottons for clothing, we need to buy hides and skins—millions of them—for our leather supply. We need quebracho to tan the skins into leather so that we may have cheap shoes. We buy jute from India for bagging, and for cordage sisal from Yucatan, and abaca from the Philippines.

Our imported foods. We import sugar by millions of tons, every banana that we eat, every grain of coffee, every leaf of tea,

every spoonful of cocoa and chocolate, all the spices, coconut oil, and a long list of minor products.

In the matter of foods we must not overlook the things we must import to *produce our own foods*. An ever-increasing proportion of our food supply depends upon commercial fertilizers. Although we have plenty of phosphorus and export it to other countries, we have long been dependent upon foreign lands for potash, one of the vital elements of plant food. Potash is important to build the stalk structure of plants. During the World War, when we could not get potash from Germany, potatoes were blighted because the plants were weak for want of potash.

Two examples. We can see the relation of imported raw materials to American industries and American living by examining two examples—rubber and tin—each the type of many others.

Rubber. The early European explorers found the natives of America playing with balls of rubber. Rubber was soon found to be useful in rubbing out pencil marks, hence the name. For a long while it was used for little else. Then we began to discover things about rubber, and now we

are making 30,000 different rubber articles and inventing new ones every month.

The invention of the pneumatic tire, first for bicycles, then for the automobile, caused our imports of rubber to shoot up from a few thousand tons a year to hundreds of thousands of tons a year. For centuries rubber had been supplied by the wild trees of the forest, but the great demand set men to experimenting and making rubber orchards (plantations). These were so successful that the growers in Ceylon, the Malay Peninsula, Java, glutted the market by the year 1918. In the hope of improving their business, they formed a price control agreement and limited the output so that they could get a profitable price. Because of the high prices which resulted, the Americans began to hunt the world over for an independent source of rubber. Thomas A. Edison examined 14,000 plants to see if they contained rubber. He found that 1240 of them did, 600 of them in promising quantity. Mr. Edison finally settled upon the goldenrod as the most likely plant—not that it contained a great deal of rubber within, but the plant was “sowable and mowable,” and could be handled as wheat or hay. Therefore, he started breeding goldenrod plants to improve the rubber content, expecting them eventually to yield 150 pounds of good rubber to the acre. In 1934 the Edison Botanic Research Corporation was continuing the experiments.

The Russians report new rubber-yielding plants in central Asia.

The rubber price agreement was a complete failure, because the Dutch growers would not cooperate. Therefore the English limited their output, put up the price, and the Dutch made money on it and set out more plantations.

We can see what Mr. Edison's plan will

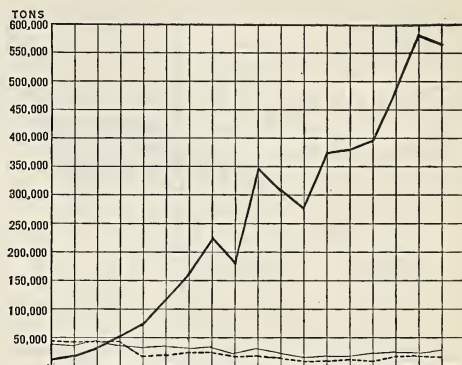


Fig. A. What does this graph show about the world production of rubber for a period of eighteen years from 1910? From a *Commerce Yearbook* find figures to complete this graph.

Heavy line—Plantation-grown, mostly in the Far East.
Fine line—Grown in the Amazon Valley.
Dotted line—Grown in all other places.

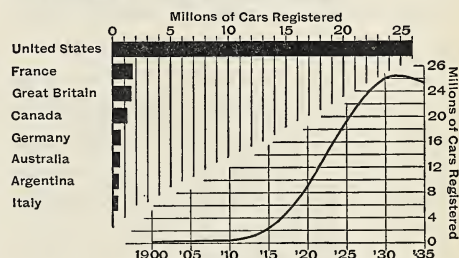


Fig. B. This graph shows two sets of facts: the number of automobiles registered in eight leading countries; the number of cars registered in the United States from 1900 to 1935 (Est.).

have to face when we consider the fact that in June, 1933, an expert of one of the great rubber companies reported that they were paying men on their Sumatra plantation 16 cents American money a day; women, 14 cents. He also said that ordinary rubber plantations were yielding 450 to 500 pounds an acre a year, but that budded trees of improved and carefully selected varieties were yielding 2500 pounds an acre, and that they expected to deliver rubber at New York for $3\frac{1}{2}$ cents a pound.

There is the possibility that rubber may be made in laboratories from chemicals.

As things now stand suppose we should suddenly cut off our import of rubber.

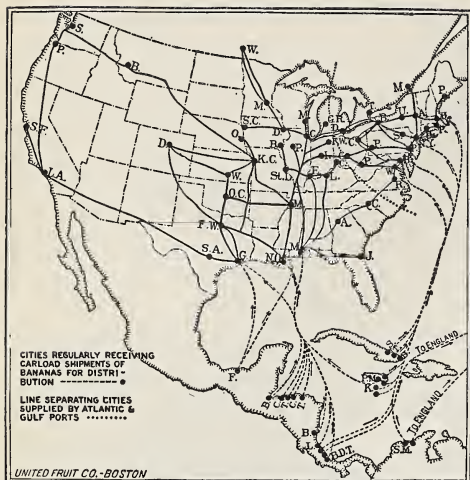


Fig. A. The banana is an excellent example of our dependence on other countries for useful things.

We would have a rubber famine of very acute proportions, indeed, before we could get our home supply from goldenrod started, and under present conditions it might make a tire that cost ten dollars cost a hundred, although we would doubtless improve our goldenrod crop and gradually reduce this cost somewhat.

I mention rubber as an example of a commodity that we might, at great sacrifice and increased cost, produce at home if we ceased to import it.

Tin. Tin is an example of a commodity that we cannot produce at home under any circumstances, because it depends upon the chance fact that Nature happens to have left practically no tin ores in the United States. Therefore we import our whole supply chiefly from Bolivia, the Malay Peninsula, and the East Indies.

The sudden absence of tin in the United States would cause endless bother.

The case of the iron industry. We say that we have great resources for making iron, and we have; but someone recently examined the industry carefully and discovered that we were importing forty

different raw materials to use in the iron and steel industry and were getting them from fifty-seven different countries. For example, we cannot make tin plate without getting palm oil from Africa. The harder steels use nickel, manganese, and many other metals for alloys. We import practically all our nickel. We have a little manganese, but in normal times we import it by the hundreds of thousands of tons.

First step, second step, third step. If we should suddenly cease all foreign trade, it would be almost impossible to count the number of commodities we could not have, of processes we could not carry on, of factories that could not run, of industries and towns that would be bankrupt. And the cost of living would increase for every man, woman, and child in the United States.

The cutting off of small imports would often affect one thing and then, through that, another, and another and another and yet another. It would be like the old story of the old ladies and the clover seed. Old ladies, so runs the story, are necessary to the clover-seed crop because old ladies keep cats. The cats catch mice which therefore do not destroy the bumblebees nests so that the bumblebees go from clover plant to clover plant and carry pollen which fertilizes the blooms and thus they give us a crop of seed.

Both Nature and industry are full of such strings of related events. There are plenty of examples in the chemical industries. We import many chemicals from Europe, especially Germany.

THINGS TO THINK ABOUT AND TO DO


Dependent America. Choose one important article of commerce which we do not produce in the United States. Tell where this article is produced and how we would be affected were the supply cut off.

After all the reports have been made you should have a list of things we need but do not produce. You will be surprised at the length of the list.



Fig. A. This map of cities of 100,000 or more people shows very clearly where most of the factory manufacturing is done. Notice particularly England and the Rhine Valley in Europe.

THE MANUFACTURED GOODS WE MAKE

 What does a neighborhood need if it is to become a great manufacturing centre?

THE NEEDS AND RESOURCES FOR MANUFACTURING

Every man and every country. No matter where he is, no matter what he does, every person wants food, clothes, fuel, house or shelter of some sort, tools to work with (or to play with), and, lastly, every man has, or wants to have, some luxury — something he does not just have to have to keep alive.

The industries of the world have the job of supplying these six needs of mankind.

The farm or the factory. The materials for some of these six needs come directly from the farm to the home, but more of them pass through a factory on the way from the farm, the mine, the forest, or the sea to the store and the home. The machine age seems to send more and more of us to factories. Where are the factories located, and, therefore, where are the manufacturing industries?

The man, the farm, the factory. If a man keeps in good health, he must have a

considerable variety of foods to meet the needs of his body. We have found that a healthy crop plant like wheat or bananas must have a certain set of conditions to meet its needs; the crop is grown in the place where these conditions can be met. The factory is like a man and also like a crop. A factory must have a number of things to supply its needs and to keep it healthy (busy and profitable). Let us list the needs of a factory or a manufacturing industry or a manufacturing town.

(a) *Laborers.* There may be automatic machines, but there must also be some laborers, both skilled and unskilled, and some of the workers must be intelligent.

(b) *Climate.* If the climate of a region enables men to be healthy and energetic, that is a good place for a factory. It is a poor location for manufacturing if the workers are exhausted by heat or stupefied by too much cold.

(c) *Education.* The workers in a factory will do better if their minds and hands are trained in good schools.

(d) *Managers.* Someone must buy and sell, inspect, make plans, and supervise the works. This is a difficult task, and every factory needs skilled managers.

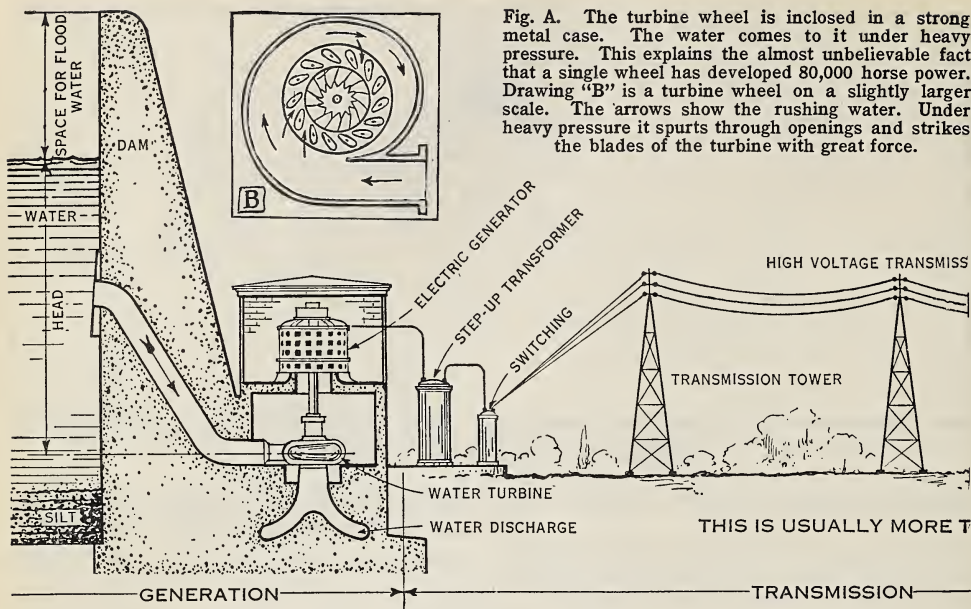


Fig. A. The turbine wheel is inclosed in a strong metal case. The water comes to it under heavy pressure. This explains the almost unbelievable fact that a single wheel has developed 80,000 horse power. Drawing "B" is a turbine wheel on a slightly larger scale. The arrows show the rushing water. Under heavy pressure it spurts through openings and strikes the blades of the turbine with great force.

(e) *Inventors.* Improvements are constantly being made in machinery; therefore, inventors who do this creative work are necessary to successful industry.

(f) *Power.* Every industry needs more power than man's muscles can supply; therefore, a factory needs to be within reach of waterfalls, or where coal or some other source of power is cheap.

(g) *Raw materials.* Every manufactured product requires raw materials; therefore, a factory must be located where the necessary materials can be secured cheaply.

(h) *Capital.* Suppose the factory owner wishes to enlarge his plant. Money is needed to pay for additions and new machinery. If people have money to invest, the factory may grow. Money for investment often passes from one country to another. Many of the larger American companies now have branch factories in foreign lands.

(i) *Market.* Who will buy the things

the factory makes? If there are enough buyers, the factory and its town may prosper.

(j) *Good transportation.* Make your own list of the ways in which transportation is necessary in a manufacturing town.

(k) *Good government.* In a manufacturing town, as in every other place where people live, laws are needed to regulate the conduct of the people. A good police system should keep order. Just courts are necessary to settle disputes. For several years factories have not been built in most parts of China partly because of the fear that some army will take possession and perhaps destroy.

Studying the industries. We need to keep these things in mind as we study the great industries of many states or countries and the great commodities in world trade.

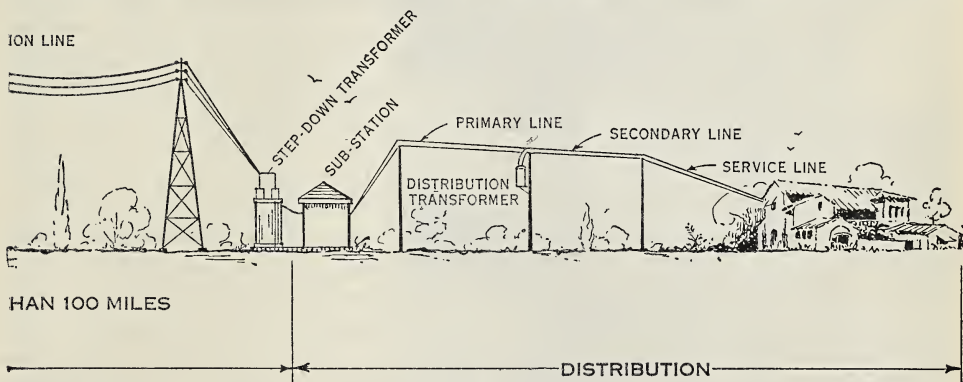
Our resources for manufacturing. The United States has great resources for manufacturing. First, there is power to run machinery: we have more coal than any

other continent; we produce more oil than any other continent; we have more water power than any three countries of western Europe.

For making machinery we have iron, copper, zinc, glass, and wood in forests north, south, and west. We have clay sand, lime,

therefore many places for water wheels and water-driven factories. People who had made money at fishing, whaling, and trading, were ready to invest in factories. Good workers came from her hilly farms.

New England started the textile factories, and to this day, cotton mills and



cement — these materials for making houses, factories, roads, bridges.

Then we are rich in foods for men, especially the great staple foods—bread, meat, potatoes, fruits, vegetables. We have canning factories to preserve food and to make it ready for use. We have the greatest clothing material — cotton — and although we import much wool, we produce more wool than all the European countries west of Russia.

It is not surprising that for the last seventy-five years we have found a steadily increasing proportion of our people who work in factories.

THE NORTHEASTERN COAST REGION

The manufactures of New England. New England started factory manufacturing in the United States. A man named Slater came from England and taught some people in Rhode Island how to make machines that spun and wove. New England had many waterfalls and

woolen mills are two of her great industries. Water power was first used; then in many cases factories got too big for the water power, so New England began to import coal, mostly by sea, from New York City, Philadelphia, Baltimore, and Norfolk. She also started the factory shoe industry, and many towns of eastern Massachusetts still send shoes to hundreds of places outside of New England.

You will note that New England does not produce much of the raw material that she uses. This makes it necessary for her to produce goods of much value from little material, so she has built up a great number of industries that have this quality. For example, hardware — rifles, skates, jewelry — and thousands of small articles are made in New England and sent all over the United States and to many foreign countries. Of late years we have learned to make paper from wood, and upper New England, which is mostly a forested region, has a number of paper mills using the only

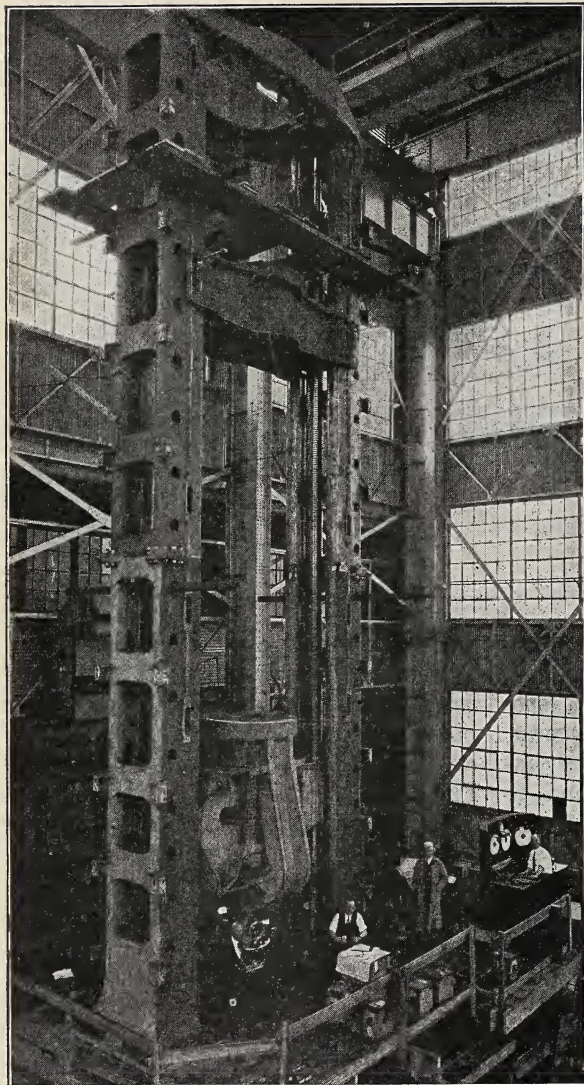


Fig. A. This testing machine in the University of California laboratory was built near Philadelphia. It can test a piece of material that is thirty-three feet long and give it four million pounds pressure in many different ways. Much study and investigation and testing of materials are necessary in designing new machinery.

important local raw material that is manufactured in New England.

The location of New York, Philadelphia, and Baltimore. Find on your map the distance from New York to Scranton

(anthracite); from Philadelphia to Connellsville (bituminous coal); from Baltimore to Cumberland (bituminous coal). It is downhill most of the way from the Appalachian coal fields to these three ports. These cities and their suburbs are located on the edge of the coastal plain with its vegetables, near the Appalachian hills with their fruit, and near the Piedmont farms with their grass and milk. The abundant food supply feeds the workers. Each of these three cities has a fine harbor and steamship lines to bring raw materials from any continent and take exports to any country. Their closeness to coal and the iron of Pittsburgh causes them to have heavier industries than we find in New England.

Philadelphia, with her suburbs of Camden and Chester, makes machine tools (Fig. 492-A), locomotives, ships, woolen goods, and many other articles. Wilmington is the center of great chemical manufactures as well as of machine shops. Baltimore is not greatly unlike Philadelphia except that Baltimore is smaller.

NEW YORK TO BUFFALO

The Mohawk Gap. It costs less to carry freight by water than by land. Because of that fact, the people of New York took advantage of a favorable opening in the eastern highlands and made a waterway from the Atlantic

at New York to the Great Lakes at Buffalo. This made New York the cheapest place in the United States from which freight on any part of the Great Lakes could reach the sea. This made

New York the great port (seaport) and it also made Buffalo a great port (lake port).

Buffalo. Buffalo receives great quantities of raw materials from the Lake region — wheat, corn, oats, lumber, iron ore. On the shore of one of the lakes she has one of the great steel works of the world. Many factories make machinery. Buffalo is a great lumber market and a great flour-milling center.

New York. New York, the great seaport, was and is the place for landing the fine goods from Europe — all sorts of things, from silk hats to marble statues; from furs to olive oil; chemicals and carpet wools. New York was the natural place for the wholesale store, and the wholesale store is a natural market for clothing, so New York has built up the greatest clothing industry of the United States. Along the hundreds of miles of water front of her wonderful harbor are shipyards that make New York the leading shipbuilding state.

Almost everything is manufactured in New York. If a manufacturer of beds or chairs or mattresses or lead pencils or shoes could supply one twentieth of the people in and around New York, he would have an extensive business, so New York itself is a market big enough to keep thousands of factories going.

The places between New York and Buffalo — specialization. The towns between New York and Buffalo have the great advantage of transportation — of the waterway and the railways that follow it — and they offer many interesting examples of specialization.

Here are a few illustrations of this specialization in manufacture: Rochester, cameras; Syracuse, typewriters; Auburn, binder twine and farm machinery; Utica, knit goods; Rome, brass articles; Ilion, typewriters; Herkimer, furniture; Johnstown and Gloversville, gloves; Little

Falls, dairy machinery; Schenectady, locomotives and electrical machinery; Cohoes and Amsterdam, textiles; Troy, shirts and collars.

THE GREAT LAKES MANUFACTURING REGION AND ITS NEIGHBORS

Chicago, Milwaukee, Detroit, and the cities of Lake Erie — Toledo, Cleveland, Sandusky, Erie, Buffalo, and their many suburbs. The locations of these cities offer many advantages. The cities are near the center of population of the United States and therefore are close to markets for their products. Make a list of the raw material power and transport advantages of their location. It is natural that Buffalo and these other cities should have a great *variety* of industries.

This region also has two great specialties.

Chicago. Chicago, at the edge of the greatest commercial farming region in the world, has naturally become a great grain market and the world's greatest meat-packing center. This farming region is also the greatest market in the world for agricultural machinery, and since agricultural machinery is bulky, it is easier to ship carloads of iron, steel, lumber, and tin plate than carloads of machinery. So it is an advantage for this product to be made as near the market as possible. Chicago is the greatest center in the world for the manufacture of agricultural machinery.

Detroit. Detroit is a great automobile-manufacturing center. In that city and near it more than half of the world's motor cars and trucks are made. You yourself can make a list of its advantages for this industry. Be sure to include the fact that it is near the center of population of the United States.

The Ohio valley cities. Pittsburgh, Wheeling, Charleston, Portsmouth, Louisville, Evansville, and Cincinnati with its



Fig. A. One of the great automobile plants near Detroit. Find in the picture the artificial harbor, the ore boat, ore pile, blast furnaces, the huge workshops, and the town beyond.

neighbors, Hamilton and Norwood, have locations that are almost as good as those of the cities on the lakes. The Ohio valley cities are closer to the Appalachian coal and lumber. Steamboats and barges on the Ohio carry Pittsburgh coal and steel to every river town.

The iron and steel triangle. In thinking of this region we should remember that the triangle between Buffalo, Pittsburgh, and Chicago is the greatest iron and steel region in all the world.

The upland cities between the Lakes and the Ohio. The network of railroads between the Great Lakes cities and the Ohio valley cities gives to intervening territory quick and cheap assembly of the heavy raw materials. In every direction one sees the freight train with its string of coal cars, carloads of iron, steel, or machinery. With this assistance Columbus, Dayton, Springfield, and Marion, Ohio, and Indianapolis and Fort Wayne, Indiana, have grown to be important manufacturing cities.

Heavy industries. The raw materials of the inland region give it heavy industries — meat packing, flour milling, and, above all, iron and steel and machinery. There are hundreds of types of machinery made in this region. Columbus manufactures much mining machinery. As we approach each city, we see smokestacks of

the machine shops that make steam shovels, or ditching machines, or road machines, or pumps, or windmills, or laundry machines, or farm fencing, or roofing material, or nails, indeed, metal products by the hundred. Here also are those other heavy industries, the making of glass and pottery. There are also furniture factories in many cities on the Lakes, the Ohio, and the land between.

Finer industries. This region is like New England also in making finer metal products — cash registers, in which Dayton leads, and watches.

Manufactures in the St. Lawrence valley. The cities in the Canadian part of the Great Lakes region possess all the materials and natural aids to cheap transport to be found on the American side. The Canadian cities also have another water route to the sea. The Welland Canal, near Buffalo, enables ships to go from Lake Erie to Lake Ontario, a drop of 326 feet. Other canals allow boats to pass around the rapids of the St. Lawrence and out to sea.

MANUFACTURING CITIES ON AND WEST OF THE MISSISSIPPI

Cities on the Mississippi. Four large cities stand on the banks of the Mississippi. Like the cities in the plains to the west they are not in a manufacturing region.

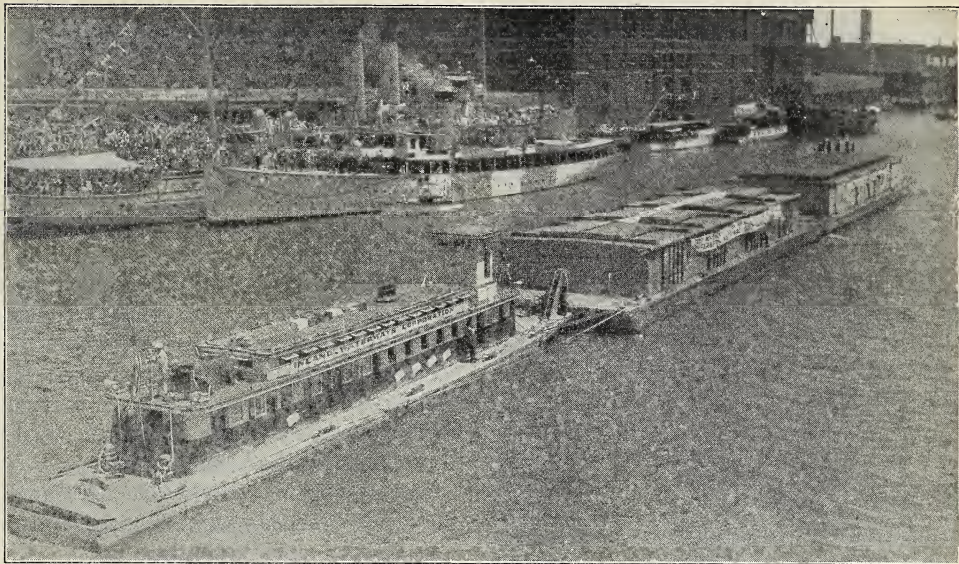


Fig. A. Chicago celebrates. The river steamer in the center is the reception boat with mayor, city officials, and distinguished guests welcoming the arrival in Chicago Harbor (1933) of the first barges from New Orleans. This was the formal opening of a new waterway, nine feet deep, through the Chicago drainage and ship canal and the Chicago River. ¶ The two barges have cargo space, 96 ft. by 28 ft. by 8 ft. 4 in. They will carry 400 tons on five-foot draft. The tug at the left foreground will pull five such barges and has a pilot house that descends to go under low bridges.

However, they have important manufacturing industries.

New Orleans has sugar refineries, oil refineries, rice mills, fertilizer factories, and many industries which supply the home market, but New Orleans, like Houston, Texas, is primarily a distributing center and a port with large exports of cotton, lumber, and many other articles.

At the other end of navigation on the Mississippi, St. Paul and Minneapolis produce great quantities of flour, packing-house products, and butter. Sometimes farms as far away as Nebraska send their products to these city plants. These cities, like New Orleans, are chiefly distributing centers.

St. Louis, close to the center of population of the United States, has eighteen trunkline railroads which have helped to make it a great wholesale center from which many things are shipped to the small

towns of the Southwest and even to Mexico. The railroads have also helped to make St. Louis a great manufacturing center. If you will recall the facts you have learned about the chief industries of the United States, and remember that St. Louis is on the navigable Mississippi not far from the navigable Ohio, you will see that with few exceptions all important raw materials can be assembled there cheaply. Therefore St. Louis has come to be a manufacturing center for a great variety of products.

Manufactures of the cities beyond the Mississippi. Dallas, Fort Worth, Omaha, Des Moines, and St. Joseph have packing plants that ship to distant markets, and many factories that make products for use in and near the city. Compare the transportation problem of some of these cities with that of some cities farther east.

Winnipeg, the commercial metropolis of

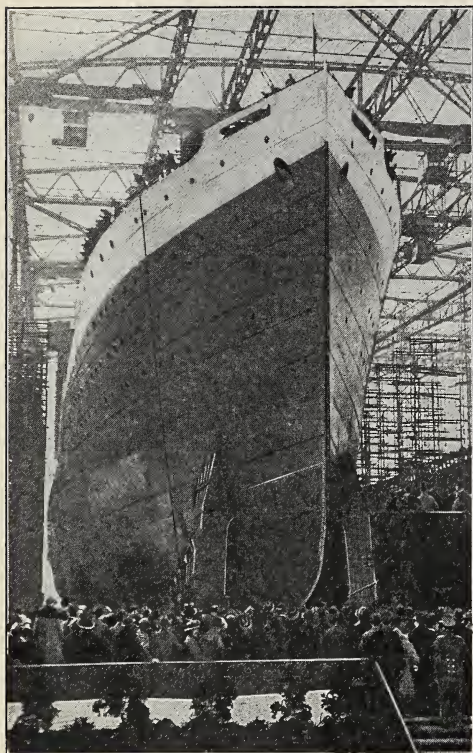


Fig. A. The ship is the largest thing that man has moved. He builds it on a sloping way and lets it slide into the water. The modern steel steamship is a great job of machinery building. The chief centers for shipbuilding are in the vicinity of New York, Philadelphia, Boston, Newport News, San Francisco, and Seattle. In Europe important centers are the rivers Clyde (Scotland) and Tyne (England), and the harbors of Hamburg and Bremen.

the Canadian prairie provinces (spring wheat region), is so much like the other cities west of the Mississippi that we need merely say "There is another one."

From what you know, make a statement about manufacturing in a city in or near the Rocky Mountains.

The Pacific coast. The Pacific coast can scarcely be called a manufacturing region, but it has four important and growing manufacturing centers: Los Angeles and vicinity; San Francisco, Oakland, and other towns on San Francisco

Bay; the Puget Sound region with Seattle and Tacoma; and the Willamette valley with Portland.

The Pacific coast lacks abundant coal; no iron is made, but the oil field of southern California gives a cheap and efficient source of power. There is much water power in the Sierra Nevada, and more in the Cascades near the cities on Puget Sound and the Columbia River. This region is really the water-power center of the United States. Such power is a *great* resource.

For a long time manufacturing on the Pacific coast was limited chiefly to local raw materials, wood, fish, fruit, wheat, and to products for the home market.

Since the opening of the Panama Canal, the Pacific coast has begun to manufacture some things for more distant markets.

THE MANUFACTURES OF OUR SOUTHEASTERN STATES

Rapid growth of manufactures. The most recent great change in manufacturing in the United States has been the rise of manufacturing in the Southern States. Most of the plants are located in the region that begins at Richmond, Virginia, extends along the eastern slopes of the Appalachians to Atlanta, Georgia, and on through northern Alabama into southern Tennessee.

We find a hundred industries in St. Louis and in the cities along the New York Barge Canal, but only four main industries in the southern manufacturing region — tobacco, cotton textiles, furniture, iron, and steel.

Power is carried by wire from streams fed by mountain rains. Factories are often located in small towns scattered over a wide area. The largest cities are Atlanta and Birmingham. Others are Columbia and Greenville in South Carolina; Charlotte, High Point, Greensboro, Winston-Salem, and Durham in North Carolina; Danville,

Roanoke, Lynchburg, and Richmond in Virginia; Chattanooga in Tennessee; and Birmingham in Alabama.

Resources of the industrial area. The mild climate makes the cost of living low. The heavy rainfall of the region and the adjacent mountains is well distributed throughout the year and makes abundant water power. One great super-power system connects hundreds of towns and cities in several states. It is fed partly by water-power plants and partly by steam plants. The United States Government's hydroelectric power plant at Muscle Shoals, Alabama, is one of the greatest in the world. At present there are not enough industries to use it fully, but the Tennessee Valley Authority has plans for its use.

Tobacco manufacture. One of the largest tobacco-growing regions in the United States is in central North Carolina and the near-by parts of Virginia and South Carolina.

Unmanufactured tobacco is bulky stuff. By having farm and factory near together, long hauling is avoided. In Winston-Salem, Durham, and Richmond millions of dollars' worth of tobacco is manufactured into cigarettes, smoking tobacco, chewing tobacco, snuff, and by-products.

The textile industry. The textile industry is scattered throughout the entire length of the region. In driving through this region, from Virginia to Alabama, one sees many, many textile mills. These mills make many different kinds of cloth and the quality is improving.

Furniture manufacturing. Oak from the southern Appalachian Mountains is excellent material for making furniture. Other useful woods are found, such as hard pine from the long-leaf pine districts of the sandy plains, and gum from the southern swamps. North Carolina has advanced rapidly in the manufacture of furniture.

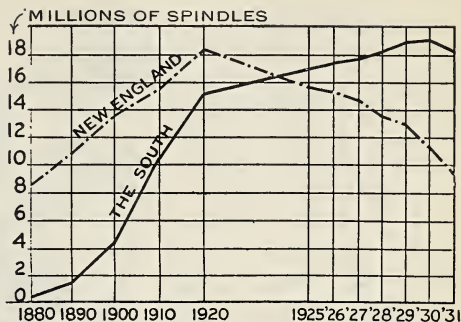


Fig. A. What does this graph tell about the textile industry in New England and in our Southern States?

Iron-ore smelting. Birmingham is the only place in the United States where the three materials for iron making, ore, coal, and limestone, are close together. The barges on the Warrior River give water transport to ship side at Mobile, and through canals and lagoons to New Orleans.

North Carolina leads. North Carolina, having a leadership of the South in textiles, furniture, and tobacco, is far ahead of any other Southern State in value of manufactures.

THINGS TO THINK ABOUT AND TO DO

Reports. Prepare a report: 1. Showing how Nature provided New England with the qualities to become a manufacturing region.

2. Comparing the Baltimore district and the Boston district as places for manufacturing.

3. Describing St. Louis as a wholesale center.

4. Listing power resources on the Pacific coast.

Scattered industries. 1. Make a list of some industries that every large city must have. Explain why.

2. Name some industries that are not necessary to every city.

3. Name some industries near your school that produce products for home consumption; for wider consumption.

A new national project. What plans have been made for the development of manufacturing in the Tennessee valley? For information write the Tennessee Valley Authority, Knoxville, Tennessee.

COMMERCE

“The world is one — trade has made it so.” Tell what this statement means.

WHY WE BUY AND WHERE IT COMES FROM

The retail store. You go to the store to buy something—a lead pencil, a spool of thread, a yard of cloth, a pound of sugar, a can of vegetables, a pound of meat, a pair of shoes. The store from which you buy is a *retail store*. Back of the storeroom or in the basement a ware-room is usually found. It contains boxes barrels, bales, bundles, cartons, and cases of goods from which the merchant stocks his shelves. The retail store sells goods in amounts as small as you want.

The *wholesale store*. The retail store gets its goods from a store which sells in large quantities to other stores. This store, which is called a *wholesale store*, sells in large packages—a box of spools of thread, a large roll of cloth, cases (24) of canned goods, whole carcasses of meat, barrels of sugar, or hundreds of various articles. The wholesale store does not have counters over which it sells articles as the retail store does. Its goods are hauled away in trucks, wagons, and cars. This wholesale store may be really a very large warehouse which buys in large quantities, often in carload lots, from the canning factory, from the cotton mill, the woolen mill, the sugar refinery, or the slaughterhouse.

The *importer*. If the goods are not made in this country, they must, of course, be imported from some other country. The wholesale store that supplies your

RAW MATERIALS

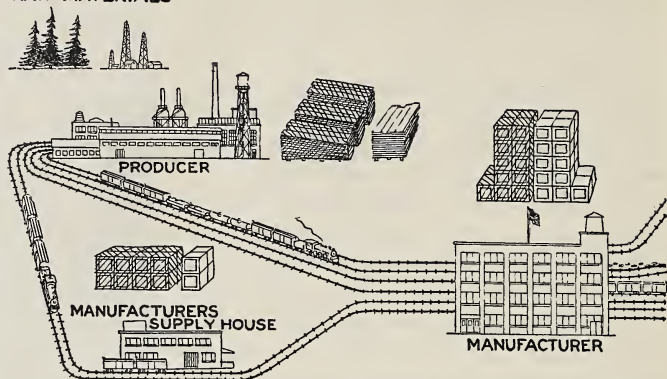


Fig. A. Most articles of commerce must pass through many hands before consumer can you find in this picture? How many routes

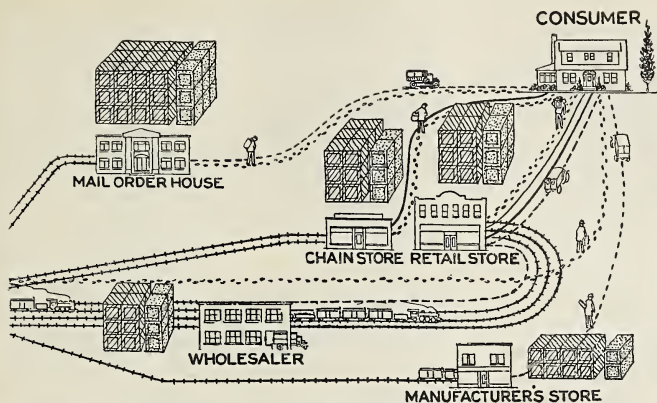
retail store buys some things from an importer whose goods come in ships or cars, mostly ships, from foreign countries. You will find importers of many kinds of things in New York, Boston, Philadelphia, Baltimore, New Orleans, Houston, San Francisco, and Seattle.

In these same cities you will also find many exporters of goods made in America.

THE REASONS FOR TRADE

What is trade? We will understand the trade of our country better if we do a little thinking on what trade really is.

Why do men and nations trade? Men trade because they have different kinds of goods and each wants what the other has. Just think of the amount of trading that is done by the families of the boys and girls in your class. Doubtless some of the fathers of families work at making things, and some at carrying or selling things. Most of those who make things make only one article or perhaps only a part of one thing, and in the course of a year each family buys a great many different things. Did you ever try to make a list of all the people who helped to make the things you use in a year?



they reach the consumer. How many middlemen between producer and can you find by which the products may reach the consumer?

Why do different men have different kinds of goods? There are three main reasons for this difference in goods and this trade.

(1) *Men differ in their skills*—in the things they can do. Therefore, they produce many different articles. Make as long a list as you can of examples of trade between different countries that happens because of differences in the personal skill of workers. (Hint: Germany, Paris, mass production, Japanese silk.)

(2) The second important reason that people have different kinds of goods and therefore trade is that they live in places *with different kinds of resources*. Therefore they have different products and wish to trade with each other. Make a list of examples of trade that arises:

1. Because of differences in climate in different places or different countries.

Collect your examples into groups.

Each example in each group must be the *same kind of example*, but happening in a different place.

2. Because of differences in mineral resources. Collect in groups as above.

3. Because of differences in other natural resources.

The fourth reason for difference in products is:

Because of differences in the stage of *industrial (manufacturing) development*. For example, New Zealand and Montana produce wool, send it to Europe or to eastern United States, and in return buy woolen cloth, automobiles, and machinery. New Zealand and Montana both have coal and *might* make cloth, but their population is scanty and most

of the workers are farmers.

Japan sells silk to us. A family with a half acre or an acre of ground in mulberry trees does in a season hundreds of days' work of men, women, and children at tending the silkworms. We buy the silk. We pay for it in part with cotton. The cotton grower has ten or twenty times as much land as the Japanese family.

THINGS TO THINK ABOUT AND TO DO

Studying a picture. Study carefully Figure 498-499-A. Then tell the life story of some article of commerce from the raw material stage until it reaches the consumer.

Breakfast, lunch, and dinner. 1. Make a list of the different foods which you eat in any one day.

2. In another column write the name of the state or country where each food may have been produced.

3. In a third column tell how the food produced was transported to you.

Then and now. 1. How did the early Puritans supply their needs?

2. How does the Indian in the Great North Woods supply his needs? the Eskimo? the black man of the tropics?

3. Why are you able to have many more different kinds of things than the Puritan, or the Eskimo?

| | | | |
|--------------------------------------|-------------------------------------|-----------------------------------|---|
| 77 bales Leather | 1 bale Gummed Tape | 1 bale Talcum Powder | 1 bale Paper |
| 2 cases Gelatin Des- sert | in Rolls | 2 cases Talcum Pow- der | 1 bale Colored Linens and Cottons |
| 178 cases Baking Powder | 26 bales Florida Water | 1 case Glycerine | 2 cases Soap |
| 12 cases Quaker Oats | 1 case Flashlights and Batteries | 6 bundles Steel Bars | 3 crates Straw Hats |
| 1 case Corn Meal | 3 bales Hair Tonic | 8 bundles Metal Lath | 1 bale Woolens |
| 1 case Hominy | 1 bale Medicinal Soap | 1 carton Fancy Soaps | 1 bale Bleached Cot- ton Handkerchiefs |
| 2 cases Flashlight Cells | 7 cartons Ice-Cream Powder | 1 case Fancy Soaps | 1 case Yeast |
| 2 cases Lubricating Machine Oil | 5 cartons Powdered Chocolate | 4 bales Fancy Soaps | 30 bags Potatoes |
| 1 carton Advertising Matter | 1 carton Sweet Choc- olate | 2 bales Dental Cream | 21 bags Onions |
| 25 bales Cotton Piece Goods | 5 cartons Breakfast Cereals | 25 cases Condensed Milk | 3 cases Apples |
| 1 case Rubber Heels | 2 cases Breakfast Cereals | 2 cases Powdered Milk | 3 crates Grapes |
| 13 bundles Machetes (long knives) | 6 bundles Wall Board | 10 cases Evaporated Milk | 4 crates Lettuce |
| 6 boxes Axes | 1 case Cameras | 1 case Railway Parts | 1 crate Celery |
| 2 cases Films | 1 case Films | 1 package Railway Parts | 1 crate Carrots |
| 12 cartons Paste Shoe Polish | 10 cartons Candy | 9 cartons Electric Bulbs | 1 bag Beets |
| 10 cases Oats | 1 case Ice-Making Machines | 15 bales Dry Goods and Notions | 1 bag Yellow Turnips |
| 15 cartons Oats | 1 case Toilet Prepara- tions | 1 drum Vaseline | 1 crate Cauliflower |
| 31 cartons and bales Paper Bags | | 1 case Hollow Ware | 2 cartons Cotton Um- brellas |
| | | | 1 box Cheese |
| | | | 1 case Ham and Bacon |
| | | | 1 case Sulphate of Quinine |

Fig. A. Articles on the ship's manifest about which you will read on this page.

78 NATIONS AND THEIR PLACE IN WORLD TRADE

We will understand the trade of our own country better if we first examine the trade of some other countries, for when it comes to trade, there are *kinds of countries*.

1. THE HONDURAS TYPE. A few exports of tropic agricultural produce and many manufactured imports.

The trade of Honduras. We have learned (page 421) that trade and transportation have developed from small and simple beginnings to large and far-reaching operations. But not all of the world's trade is thus enlarged and developed. Even the most primitive forms can still be found in many parts of the world. Indeed, nearly all forms exist in the small country of Honduras in Central America. In the tropic forests in the southeastern part of Honduras are Indians who know but little about the white man and his things. They live by hunting and fishing and by gathering wild things in the forest. They hunt with bow and arrow and *they can shoot*.

In another part of Honduras, on the high, cool plateau, live farmers who subsist almost completely on the produce of their own little farms and gardens. They sell little (chiefly coffee), and buy little.

On the northeastern coast conditions are different from the two types already mentioned. Here American companies have banana plantations that are thousands of acres in extent. These plantations employ hundreds and sometimes thousands of men. One March day a boat of one of the banana companies unloaded 55,000 bunches of bananas in New York. There was no other cargo except bananas. Three days later the boat started on the return trip. I was a passenger on it. I found that the ship carried the articles given in Figure 500-A. I copied the list from the ship's manifest, a paper kept by the purser, who is the person in charge of freight and other goods on the ship.

This variety of goods was all on one ship sailing to one small town. There was no railroad from it to the plateau, and journeys to the capital were usually taken by airplane. In the course of the year

the variety of imports was much greater than this one cargo.

Seven eighths of all the *exports* of Honduras are bananas; coffee is second in value; and small quantities of a half dozen other exports make up nearly all the rest.

Pick out from this list of exports to Honduras examples of different *reasons for trade* (page 498).

Does the list of exports show the effect of recent inventions in the United States upon our trade with Honduras? Think of the flashlight, for example.

Make a list of other countries whose trade should be much like that of Honduras. Group the countries by continents. Find them on the political map of the world.

Pick out some of our states and some Canadian provinces which you think have trade that resembles that of Honduras. Explain.

2. COMPETITIVE COUNTRIES AND COMPLEMENTARY COUNTRIES.

Cuba produces sugar easily but cannot produce wheat. Canada produces wheat easily but cannot produce sugar so well. We say that these countries *complement* each other, which means that each produces what the other needs.

Make lists of countries that in some way complement each other.

Make lists of countries that are *rivals* or competitors, because they produce the same thing in such quantities that each wants to sell its surplus goods in foreign lands.

A Japanese foreign office official was reported as objecting to the United Kingdom's tariff policy against Japan. The official said that the export trade was a matter of life or death to Japan.

Can you explain his statement? The cottons and other goods made in Japan

by people receiving twenty-five or thirty cents a day have taken many markets in Asia and Africa that were previously supplied by English workers who got a dollar or more a day in wages. The competition of Japan in foreign markets is something that you may watch with interest.

Work out the ideas. Examine Figure 413-A. It was built by American and European capital. The materials came from the United States and Europe. Many of the engineers, superintendents, and experts are Americans and Europeans. Read about this industry (page 413). Does the development and prosperity of this plant have any influence on American and European exports? Explain fully.

3. THE DENMARK TYPE. A few exports, chiefly the product of intensive agriculture, imports of farm supplies, food supplies, and many manufactures.

What is the population of Denmark per square mile (Appendix tables)? its trade per person? When you know that 80 per cent of all her land is cultivated, and much of the rest is in pasture, you can guess something about Denmark's trade in lumber. What else can you tell about her trade from reviewing page 155? from thinking about the fact that she has no oil, no coal, almost no water power, no iron ore, no gold, no silver, no copper, no aluminum, lead, or zinc? Her people are highly civilized, with wants like our own. Their houses are furnished much as are our own. How do the Danes get these things? Should our country be interested in Danish foreign trade? (Hint: 70 per cent of the Danish automobiles come from the United States.)

The trade of the United States. Now let us look at the trade of our own country. On page 505 we have lists of our leading exports and our leading imports, for a prosperous year and for a year not so

WORLD TRADE





Fig. A. World trade. The amount of trade is indicated by the width of the red bands. Dotted lines indicate trade of minor importance. Dash lines indicate trade of moderate importance. See the trade arrows. The arrow from Canada into the United States is light; the arrow from the United States into Canada is bold. The bold arrows indicate a larger volume of trade than the light arrows.

Before you study this map compare it with the map showing density of population. On a physical and political map of Asia trace the caravan route from the city of Sian near the Hwang River in China, westward to Lanchow, Soochow, Hami, Kashgar, Samarkand, Bukhara, Merv, Meshed, Tehran, Tabriz, Trabzon. This camel journey has been made for ages, the camels picking their living as they went. But what of the cost? It took months of travel, hot and dusty or cold and dusty. Think of the cost per ton mile, and per ton for the whole journey.

Now remember that Kashgar and Samarkand and

Meshed are oasis towns surrounded by hundreds of miles of scanty pasture and see how good an account you can give of the industries of this people and the goods they bought from foreign lands and the goods they sent to foreign lands.

Now do the same things for the industries and trade of Samarkand after the Russians built a railroad direct from Moskva (Moscow) and Leningrad. The freight rate was reduced to a cent and a half per pound.

Point out on this map some routes where the following articles are carried. Be sure you tell which way the article is moving and what the nation which buys it sends out as payment.

wheat
lumber
cotton
phosphate
petroleum
gasoline
rubber

tires
wool
woolen cloth
cameras
chemicals
iron ore
tea

bananas
oranges
raisins
butter
mutton
beef
palm oil

furs
steel rails
machinery
coffee
spices
canned fruit



Fig. A. A New York company built these piers, freight sheds, and rows of fireproof factories just beyond them. Railroad cars and trucks run into the freight sheds, and right up to the doors of the factories. If you wish to manufacture something, a ship may unload a thousand raw materials in the freight shed. Your product will be manufactured across the street, and go to market by what three means of transport? ¶ A manufacturer can rent a room, a floor, a whole building. It will be heated, lighted, and electric power can be had by sticking a plug into the wall.

prosperous. We see first of all that there was a very great decline in trade in every single class of goods. One reason for this is that nearly every country, including our own, has raised the tariffs. That is to say, if I send some apples to France, I may have to pay a dollar a bushel tax to be allowed to take them into France. My bushel of wheat will have to pay nearly a dollar when it enters Germany, and my pound of foreign wool or yard of foreign cloth will have to pay tax (tariff) when I bring it into this country.

If we examine these imports and exports of the United States, they will tell us many things about our country. For example, we have become to some extent, a manufacturing nation because, first, we manufacture and sell abroad as well as at home many of our own raw products. Find in the list of exports some goods that show that.

Second, we import some raw materials and export the goods manufactured from them. Find some things in the two tables that show that.

The kinds of trade we have. On page 498 we gave the three main reasons for trade. Examine the imports and exports (page 505) and see how many examples of trade you can pick out that happen because of any one of these three reasons, for example:

Can you explain how our import of art works and our export of iron and steel mill products can be said to be a trade that is based on skills? and how our import of wool, mohair, and fish is based on difference in resources? and how our import of dairy products is caused to a large extent by difference in the stage of industrial development?

How do you explain the fact that we import fruits and nuts and also export fruits and nuts? the same for sawmill products, furs.

What happened to the wheat export between these two years and why did it happen?

We export canned salmon and buy other fish from eastern Canada and Newfoundland. What class of trade is that?

| Commodity | 1928 | 1933 |
|--|---------|---------|
| Cotton, unmanufactured..... | 920.0 | 398.2 |
| Petroleum and products..... | 525.9 | 200.0 |
| Machinery..... | 492.7 | 132.5 |
| Automobiles, parts and accessories..... | 501.6 | 90.6 |
| Passenger cars and trucks..... | 354.9 | 52.2 |
| Tobacco, unmanufactured..... | 154.5 | 82.9 |
| Chemicals and related products..... | 137.3 | 76.8 |
| Fruits and nuts..... | 129.3 | 69.7 |
| Dried and evaporated fruit..... | 39.6 | 21.8 |
| Canned fruit..... | 26.8 | 17.1 |
| Fresh apples..... | 26.7 | 13.1 |
| Packing-house products..... | 186.6 | 65.8 |
| Iron and steel mill products..... | 179.6 | 45.5 |
| Coal and coke..... | 99.5 | 40.4 |
| Cotton manufactures, including yarns..... | 134.6 | 39.4 |
| Cloth, duck, tire fabric..... | 79.3 | 23.5 |
| Sawmill products..... | 108.8 | 32.3 |
| Boards and timber..... | 108.0 | 32.2 |
| Copper, including ore and manu- factures..... | 169.8 | 24.9 |
| Iron and steel advanced manufac- tures..... | 85.0 | 20.0 |
| Wheat, including flour..... | 193.7 | 18.6 |
| Wheat, grain..... | 119.9 | 4.8 |
| Rubber and manufactures..... | 69.5 | 17.8 |
| Automobile casings..... | 31.1 | 9.0 |
| Furs and manufactures..... | 39.5 | 15.3 |
| Naval stores, gums, and resins..... | 26.4 | 14.7 |
| Paper and manufactures..... | 30.8 | 14.6 |
| Leather..... | 55.2 | 13.8 |
| Photographic and projection goods..... | 21.5 | 12.5 |
| Wood manufactures, advanced..... | 37.5 | 11.6 |
| Books and printed matter..... | 24.2 | 11.4 |
| Sulphur, crude..... | 14.3 | 9.9 |
| Oil cake and meal..... | 27.2 | 8.6 |
| Vegetables and preparations..... | 22.7 | 7.5 |
| Fish..... | 20.8 | 7.4 |
| Tobacco manufactures..... | 24.7 | 6.7 |
| Soap and toilet preparations..... | 15.7 | 5.4 |
| Silk manufactures..... | 18.6 | 4.9 |
| Dairy products..... | 18.5 | 4.0 |
| All others..... | 544.1 | 144.5 |
| Total Exports of United States... | 5,030.1 | 1,647.2 |

Fig. A. Leading exports of the United States. Figures represent millions of dollars.

THE FACTS AND FIGURES OF OUR FOREIGN TRADE

The importance of our imports. 1. Examine the list of leading United States imports.

2. Make a list of industries that are aided by the imported materials.

Make a list of the states and cities that would be embarrassed if imports to the United States suddenly stopped.

What foreign countries would be in trouble if our imports stopped?

List the climatic regions of the world

| Commodity | 1928 | 1933 |
|---|---------|---------|
| Coffee..... | 309.6 | 124.1 |
| Cane sugar..... | 207.0 | 107.6 |
| Silk, raw..... | 368.0 | 102.5 |
| Paper and manufactures..... | 156.4 | 77.4 |
| Newsprint..... | 139.4 | 68.5 |
| Paper base stocks..... | 112.3 | 65.3 |
| Wood pulp..... | 83.5 | 57.4 |
| Chemicals and related products..... | 143.2 | 59.9 |
| Chemicals (coal tar, industrial, medicinal)..... | 52.9 | 30.8 |
| Fertilizers..... | 78.5 | 24.6 |
| Tin (bars, blocks, pigs)..... | 87.0 | 51.2 |
| Rubber, crude..... | 244.9 | 45.9 |
| Hides and skins..... | 150.8 | 45.7 |
| Furs and manufactures..... | 121.7 | 38.1 |
| Fruits and nuts..... | 89.7 | 37.4 |
| Vegetable oils expressed and fats..... | 77.9 | 34.6 |
| Cotton manufactures, including yarns..... | 69.3 | 32.0 |
| Oilseeds..... | 60.7 | 26.7 |
| Flaxseeds..... | 31.2 | 13.5 |
| Petroleum and products..... | 132.8 | 25.9 |
| Crude oil..... | 90.5 | 17.7 |
| Advanced and refined oils..... | 40.9 | 7.2 |
| Burlaps..... | 80.1 | 24.4 |
| Flax, hemp, and ramie manufactures..... | 44.8 | 22.7 |
| Fish..... | 38.5 | 22.1 |
| Tobacco, unmanufactured..... | 55.2 | 21.5 |
| Wool and mohair..... | 79.9 | 21.5 |
| Cacao..... | 47.2 | 18.7 |
| Copper, including ore and manufac- tures..... | 98.2 | 17.6 |
| Wool manufactures, including yarns..... | 78.4 | 16.3 |
| Art works..... | 65.8 | 15.9 |
| Vegetables and preparations..... | 40.4 | 15.4 |
| Tea..... | 27.2 | 13.7 |
| Wine and spirits..... | 0.5 | 12.5 |
| Sawmill products..... | 54.9 | 12.3 |
| Boards, planks, deals..... | 40.4 | 8.2 |
| Diamonds..... | 57.1 | 11.3 |
| Dairy products..... | 34.2 | 11.0 |
| Cheese..... | 24.7 | 10.6 |
| Nickel (ore, matte, alloys)..... | 13.8 | 10.3 |
| All other..... | 943.9 | 307.7 |
| Total General Imports..... | 4,091.4 | 1,449.2 |

Fig. B. Leading imports of the United States. Figures represent millions of dollars.

(Fig. 422-A). Can you find imports that come to us from each?

Exports and other countries. 1. Examine the list of countries to which we send large exports (Fig. 506-A).

2. Tell what conditions in foreign countries will make those countries import more from us.

3. What would be the effect on our exports if:

a. Argentina opened a big oil field?
(The examination of our trade with Canada

| Country | 1928 | 1933 |
|--------------------------------|---------|---------|
| United Kingdom..... | 847.3 | 311.7 |
| Canada..... | 914.7 | 210.5 |
| Japan..... | 288.2 | 143.4 |
| Germany..... | 467.3 | 140.0 |
| France..... | 240.7 | 121.7 |
| Italy..... | 162.1 | 61.2 |
| China..... | 137.7 | 51.9 |
| Netherlands..... | 142.3 | 48.7 |
| Philippine Islands..... | 78.8 | 44.8 |
| Belgium..... | 111.8 | 43.3 |
| Mexico..... | 115.7 | 37.5 |
| Argentina..... | 178.9 | 36.9 |
| Spain..... | 86.6 | 30.8 |
| Brazil..... | 100.1 | 29.7 |
| Australia..... | 141.4 | 26.3 |
| Cuba..... | 127.9 | 25.1 |
| Union of South Africa..... | 57.0 | 22.0 |
| British India..... | 53.7 | 19.9 |
| Sweden..... | 57.3 | 18.6 |
| Colombia..... | 58.6 | 14.8 |
| Venezuela..... | 37.9 | 13.1 |
| Denmark..... | 47.2 | 11.6 |
| Total Merchandise Exports..... | 5,128.4 | 1,675.0 |

Fig. A. Merchandise exports from the United States to leading countries. Figures represent millions of dollars.

and the United Kingdom (Fig. 506-A) will help you to work out the answers to some of these questions.)

b. Brazil began to produce \$100,000,000 worth of gold a year?

c. China began building 5000 miles of railroad a year?

d. China began building 5000 miles of good highways a year?

e. China began to manufacture twice as much cotton cloth as she now does and also to manufacture some machinery?

f. Germany had a financial panic?

g. Many Americans went to Europe for the summer?

h. Spain doubled her use of the telephone?

i. Italy or Sweden had a rapid increase in population?

j. South America doubled the number of newspapers?

k. The Amazon Valley developed a successful and large rubber industry?

l. Lake Tsana in Abyssinia had a dam built at its outlet and thus were turned

into a reservoir to hold water to irrigate several million acres of land now arid in Sudan and Egypt?

m. There were a general increase of wages in Europe?

n. Great Britain doubled her exports of cotton manufactures?

Future trade. If there is an increase in the trade of ———, what do you think will be the character of that trade, and with what people will this trade be? In the blank place think, in succession about:

| | |
|---|-----------------------------|
| Pittsburgh | North Dakota |
| Detroit | Newfoundland |
| North Carolina | The tundra (page 199) |
| The Great Northern Forest of Europe, Asia, and North America (page 200) | |
| Switzerland | Belgian Congo Paraguay |

Our imports of manufactures. The table of imports of leading manufactures for the years 1932 and 1929 (page 507) shows not only the amounts but the leading countries that furnish them.

You will notice that there is less drop in paper and wood pulp, from which paper is made, than in any other group. This is partly because paper and pulp are among the very few manufactures upon which we do not impose heavy tariffs.

Nearly all of this paper and pulp is made from the conifer trees that grow in cold countries. Is there any southern country among those that supply us?

Cotton manufactures are often *style goods* — women's clothing — and manufacturers are constantly trying to get new and more attractive styles. Europe makes its living in part by making the finest cotton goods in the world and sending them to almost all the world. Switzerland makes many laces and ribbons. England, France, and Germany are continually striving to tempt our buyers. The Philippine Islands send us much hand embroidery.

My tailor sends me a note every fall and every spring telling me that he has

Paper and Manufactures

| | 1932 | 1929 |
|--------------------------------|----------|-----------|
| Canada..... | \$74,218 | \$133,858 |
| Newfoundland and Labrador..... | 5,666 | 7,438 |
| France..... | 4,732 | 6,628 |
| Sweden..... | 2,698 | 3,204 |
| Germany..... | 2,482 | 5,479 |
| Finland..... | 1,783 | 1,969 |
| United States total..... | 94,134 | 163,365 |

Wood Pulp

| | | |
|--------------------------|----------|----------|
| Sweden..... | \$18,038 | \$33,643 |
| Canada..... | 15,371 | 36,868 |
| Finland..... | 5,752 | 7,429 |
| Norway..... | 3,390 | 5,193 |
| Germany..... | 3,135 | 4,409 |
| United States total..... | 46,923 | 89,087 |

Saw Mill Products

| | | |
|--|----------|----------|
| | \$10,913 | \$54,160 |
|--|----------|----------|

Cotton Manufactures

| | | |
|--------------------------|---------|----------|
| Germany..... | \$6,136 | \$14,734 |
| France..... | 5,864 | 11,048 |
| United Kingdom..... | 3,776 | 18,592 |
| Philippine Islands..... | 2,892 | 5,534 |
| Italy..... | 2,344 | 3,218 |
| Switzerland..... | 1,737 | 4,234 |
| United States total..... | 27,902 | 69,264 |

Furs and Manufacture

| | | |
|--|----------|-----------|
| | \$28,495 | \$125,853 |
|--|----------|-----------|

Silk Manufactures

| | | |
|--------------------------|---------|----------|
| France..... | \$2,266 | \$16,613 |
| Japan..... | 1,794 | 8,686 |
| Switzerland..... | 632 | 2,492 |
| Italy..... | 326 | 1,695 |
| China..... | 301 | 1,512 |
| United Kingdom..... | 299 | 2,121 |
| Germany..... | 160 | 4,190 |
| United States total..... | 5,933 | 39,037 |

Fig. A. The tables above show the leading United States imports of manufactured or partly manufactured goods with countries of principal origin. The figures are in thousands of dollars.

just imported some fine suitings from England. England has long led the world in making fine woolen goods. Wool manufactures are much like cotton manufactures, but they include a greater variety of goods; for example, carpets as well as cloth. Persia gets into the list by sending us her famous handmade rugs and China also sends us rugs since she has recently learned to make them in the Persian way. France, Italy, and Germany are the rivals of England in making fine cloth.

Silks. If a wealthy woman wishes some very beautiful clothing, she may go to Paris to buy them. The French are an artistic people; they make beautiful things. Many American stores advertise the Paris

Wool Manufactures

| | 1932 | 1929 |
|--------------------------|---------|----------|
| United Kingdom..... | \$3,241 | \$24,575 |
| Persia..... | 2,350 | 7,907 |
| France..... | 1,772 | 6,135 |
| Italy..... | 1,118 | 7,268 |
| China..... | 904 | 2,988 |
| Germany..... | 498 | 4,145 |
| United States total..... | 12,700 | 78,500 |

Flax, Hemp and Ramie Manufactures

| | | |
|--------------------------|---------|----------|
| United Kingdom..... | \$8,902 | \$21,850 |
| Czechoslovakia..... | 3,162 | 5,294 |
| Belgium..... | 2,520 | 6,160 |
| United States total..... | 19,875 | 45,200 |

Art Works

| | | |
|--------------------------|---------|----------|
| France..... | \$6,626 | \$20,118 |
| United Kingdom..... | 4,930 | 39,639 |
| Italy..... | 2,362 | 5,626 |
| Germany..... | 2,048 | 7,537 |
| United States total..... | 18,479 | 82,106 |

Burlap

| | | |
|--------------------------|----------|----------|
| India..... | \$14,840 | \$64,267 |
| United Kingdom..... | 1,145 | 7,313 |
| United States total..... | 16,908 | 77,377 |

Fertilizer

| | | |
|--------------------------|---------|----------|
| Germany..... | \$4,669 | \$17,444 |
| Netherlands..... | 4,632 | 1,147 |
| Canada..... | 2,855 | 7,289 |
| Belgium..... | 1,481 | 5,511 |
| Chile..... | 1,444 | 34,466 |
| United States total..... | 17,858 | 72,340 |

Chemicals

| | | |
|--------------------------|---------|----------|
| Germany..... | \$9,362 | \$19,516 |
| Chile..... | 2,368 | 2,772 |
| Canada..... | 2,353 | 6,167 |
| Switzerland..... | 2,236 | 4,042 |
| United Kingdom..... | 2,088 | 8,452 |
| Belgium..... | 1,924 | 4,275 |
| United States total..... | 26,138 | 59,942 |

goods in the departments selling women's wearing apparel.

For a long time the French have been exporters of silk manufactures. Other European countries have been copying France of late.

Chemicals. Because Germany has large supplies of tar, rock salt, and chemicals, and because she has taught science in her schools and universities for many years, she leads in the export of chemicals. Chile furnishes us with most of our iodine.

In fertilizers Germany is in the lead, because she has far and away the best potash mines in the world. This is one of the commodities which is very important to us and for which we have long been

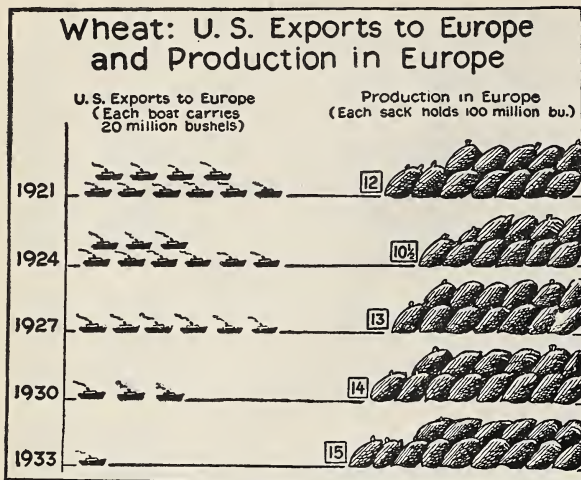


Fig. A. When Europe produces more wheat for herself, she buys less from the United States. That is the feature of the world wheat problem that this chart shows. For instance, in 1921, when many wheat ships were busy carrying the bread grain to Europe, that continent produced only 1,200,000,000 bushels. Since 1927, European countries have been producing more and more of their own wheat and the wheat traffic across the Atlantic has slowed up. In fact, efforts of European countries to supply their needs, and their buying wheat from other countries, have just about cut off our wheat exports, as the lone boat for 1933 represented in the chart indicates.

dependent upon foreign countries. Look up Chile and tell what has happened to her fertilizer trade (nitrate of soda).

Manufactures of flax, hemp, and ramie are chiefly linen and cordage. Northern Ireland and England have many fine linen manufactures.

Many young men and women who wish to be artists go to Europe to study. That helps to explain why we buy so many works of art from Europe, which for 400 years has been the teacher of the world in art.

To understand about the burlaps, read the section in India that tells you about jute. The mills of Calcutta are equipped with machinery from Great Britain, and are worked by the natives who receive very small wages.

The great decline in our imports between 1929 and 1932 helps to show us what trade is. *Because we have stopped much*

of our buying from foreign countries, those countries cannot now buy from us. This happens because trade is exchange of goods. Therefore our export trade declined when we reduced our import trade, and many, many American manufacturers had to close their factories. Now you see why the American Government in 1932 was trying to make tariff bargains so that we might reduce our tariffs if other nations would do the same.

SOME TRADE PROBLEMS TO THINK ABOUT

Climatic regions. List the climatic regions (page 422) and tell or write something about the possible importance or unimportance of each to the future trade of the United States.

1. Exports. 2. Imports.

Comparing countries. Compare our foreign trade with that of

| | |
|----------------|--------|
| United Kingdom | Brazil |
| Germany | Canada |

This can be done much better if you have the *Commerce Yearbook, Vol. II, Foreign Countries.*



Fig. A. A new kind of trade in North America. Supplies and provisions for miners and prospectors in the Great North Woods are flown in by plane and then carried by dog sled.

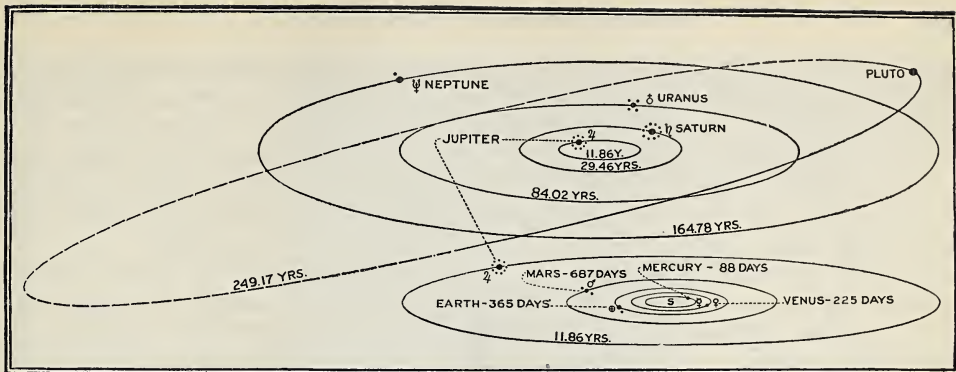



Fig. A. The sun, the nine large planets of the solar system, and their satellites.

MATHEMATICAL GEOGRAPHY

THE EARTH AS A PLANET

 How does the mathematical geography which you will study in this chapter relate to your everyday experiences?

A huge body moving through space. We have studied about the various parts of the earth's surface as the homes of men, but we have not yet studied about this earth as a whole. There are many interesting things about the earth as one of the many huge bodies of matter moving around through space. The earth is one of several planets revolving around the sun. The sun is one of millions of stars giving heat and light.

Revolving around the sun. The planets revolve around the sun very much as a weight on a string revolves around your hand when you hold the string and swing the weight around and around. The time required for a complete revolution of the earth around the sun we call a year — 365 days, 5 hours, 48 minutes, and 46 seconds. But because of the part of a day over 365 days, every fourth year is leap year. The leap year occurring every four years is a little too often (can you tell why?), so leap year skips three times every 400 years.

People once thought that sun, moon, and

stars revolved around the earth, that the earth was flat and that you might fall off the edge of it. A learned Greek, Eratosthenes, 200 B. C. discovered by mathematics that the earth was round. This increased the desire to travel, but men dared not sail out into the open sea until they had a *compass* and a ship that could tack or sail into the wind. Columbus and other great sea explorers began their work soon after the ship was improved.

How long does it take the planet Neptune to revolve around the sun (Fig. 509-A)? What is the average distance of the earth from the sun? of Neptune?

The path, or orbit, of the earth around the sun, is not exactly a circle. It is an ellipse, or a circle that is flattened a little.

SOME SOLAR SYSTEM FACTS

| | MEAN DISTANCE FROM SUN, MILLIONS OF MILES | MEAN DIAMETER MILES | NUMBER OF SATELLITES |
|--------------|---|---------------------------|----------------------------|
| Sun..... | ..... | 864,400 | ..... |
| Mercury..... | 36.0 | 3,000 | 0 |
| Venus..... | 67.2 | 7,700 | 0 |
| Earth..... | 92.9 | 7,918 | 1 |
| Mars..... | 141.5 | 4,340 | 2 |
| Jupiter..... | 483.3 | 88,400 | 9 |
| Saturn..... | 886.0 | 74,200 | 9 |
| Uranus..... | 1781.9 | 30,200 | 4 |
| Neptune..... | 2791.6 | 34,800 | 1 |
| Pluto..... | 3677.7 | unknown | ..... |

Satellites or moons. Some of the planets have smaller bodies, called *satellites*,

that revolve around them very much as the planets themselves revolve around the sun.

The earth has one satellite, the moon, which has about one fourth (0.27) as great a diameter as the earth, and is about 240,000 miles from the earth.

Astronomers, who have a very interesting time finding out things about the earth and the heavenly bodies, tell us that the moon has no air, and for that reason is colder than Greenland's ice cap.

The moon's phases — new moon and full moon. The part of the moon that is turned toward the sun shines with sunlight which is reflected to us as is the light from any distant hill. That is the reason we see the moon. The part that is turned away from the sun is in the dark, as the dark side of the earth is at night. (Fig. 510-B.) Look carefully at the new moon sometime; then tell yourself where the sun is at that moment, and you can see how it is shining on one side of the moon and not on the other.

Figure 510-A shows all this very well indeed. You can see that a person on the dark side of the earth

(where it is night) would see more of the light side of the moon when it is at D than when it is at B. Where should the moon be to show still more light?

The moon revolves around the earth every $29\frac{1}{2}$ days. That is why we never see it in the same place two nights in succession.

Eclipses. Figure 510-A also shows how we have eclipses of the sun and moon. The very black parts in the picture are the shadows of the earth and the moon as the sun shines upon them. Sometimes, as the moon goes round and round the earth, it gets in between us and the sun, as at A on the figure, and hides the sun completely from a small part of the earth's surface — that part under the shadow marked "Total." We then have an eclipse of the sun. Now look at the figure, and explain for yourself what an eclipse of the moon is.

The moons, or satellites, of other planets. The table of solar-system facts shows that satellites are quite the style in the solar sys-

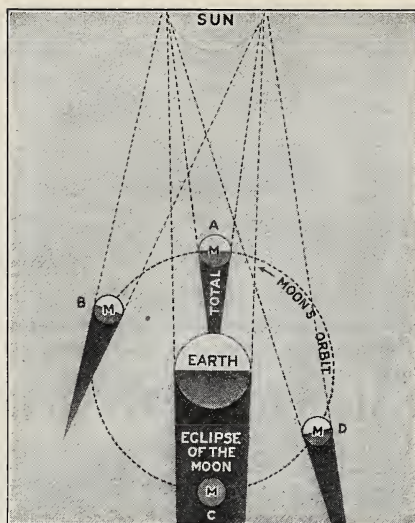


Fig. A. Position of moon, earth, and sun when we have eclipses.

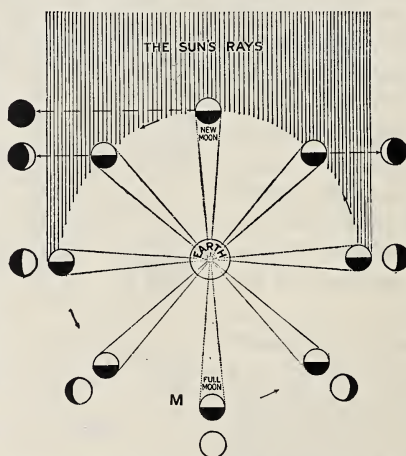


Fig. B. The phases of the moon. As the moon in its revolution about the earth every $29\frac{1}{2}$ days moves through the first, second, third, and fourth "quarters" of its orbit, its form, or "phase," seems to change. The portion of the moon between the lines indicates the part opposite the eye of the observer on earth, the white, or illuminated, portion only of this part being visible. The white area of the outer circle shows the moon as it appears to the observer at these phases and as it is usually represented.

tem, and that the earth is one of the poor brothers. Think what our night

would be if we had as many reflectors as Jupiter!

Gravitation and tides.

The heavenly bodies are pulling one another all the time. We call this pull *gravitation*. It is the gravitation of the earth for the stone that gives the stone weight. The earth and the moon pull each other all the time; and the sun and the earth pull each other all the time. Now one of the laws of gravitation is that

its pull is harder on things that are near to each other than on things that are far apart. When it pulls the solid earth, the earth moves as one piece; so the center of pull is at the center of the earth's weight, or *center of gravity*, as it is called. That is somewhere near the center of the earth, about 4000 miles farther from the moon than is the surface of the earth. Because of this difference in distance, the moon pulls the sea water on the side of the earth nearest the moon farther than it pulls the earth. This makes the sea rise on the side toward the moon, and we call it *high tide*. But the water on the other side of the earth is 4000 miles farther away than the earth's center of gravity; so it is not pulled as much as the earth. That makes high tide on the other side of the world, too. Thus there are two high tides each day on our spinning world. One is on the part of the earth that is toward the moon, and one is on the part that is turned away from it.

Spring tides and neap tides. The pull of the sun also makes tides, and when the sun and moon pull together (position A in Fig. 510-A), tides are higher than common and are called *spring tides*. When they pull against each other (position B in

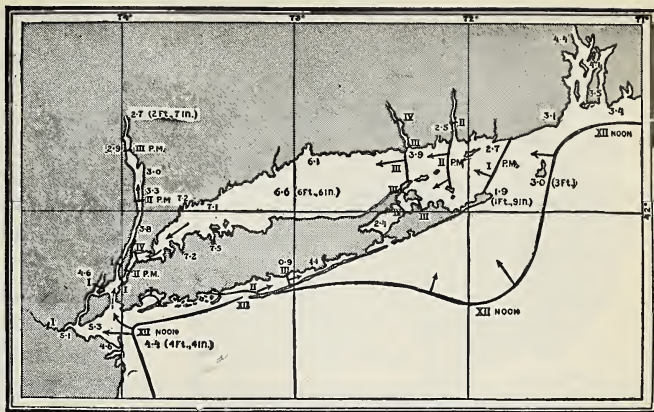


Fig. A. This map shows Long Island and vicinity with cotidal lines; that is, lines connecting points which have high tide at the same time.

Fig. 510-A), the tides are lower than common and are called *neap tides*.

Cotidal lines. In the open sea the high-tide wave runs around the earth following the moon. When it strikes the shores, its direction and speed are often changed by the shape of the land. The twelve o'clock line (XII noon) is close to the entrance of New York Bay and of Long Island Sound (Fig. 511-A). See how islands check its speed between one o'clock and four, especially in the bay at the eastern end of Long Island.

Notice that the East River, between Manhattan Island and Long Island, has tides running in from both the north and the south, and that the south tide (IV) gets there about two hours after the New York Bay tide (II P. M.).

Height of tides. The height of the tide depends upon the shape of the bay. Bays with narrow mouths have low tides and bays with wide mouths have higher tides. The Arabic figures (Fig. 511-A) show the one o'clock tide at the end of Long Island Sound to be only 1 ft. 9 in. How high is it near the west end of the sound? Low tide is called *ebb tide*.

In the East River the tide from Long

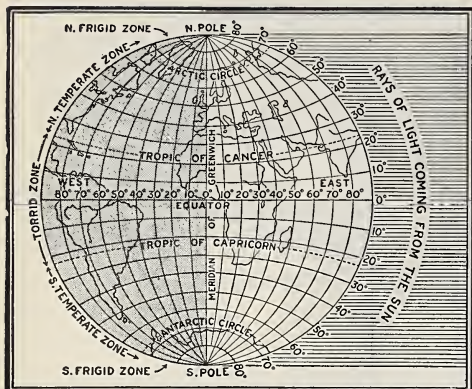


Fig. A. Half of the globe, showing latitude, longitude, day and night, the sunrise line, and the zones. Other names given to the zones are *polar*, *intermediate*, and *equatorial*. Find each on the globe.

Island Sound is so much higher than the tide from New York Bay that water rushes through into New York Bay with a swift current (tidal race) so dangerous to ships that the early sailors called the entrance to the bay *Hell Gate*.

We measure elevations on land from *sea level* — which is halfway between high and low tide.

Latitude and longitude. Suppose you had a nice new baseball and knew that there was a nugget of gold hidden just beneath the cover in such a way that it could not be felt or seen. How would you tell anyone just where it was?

Now suppose you took a spot on the ball and called it North Pole, and another exactly on the other side and called it South Pole. Then suppose you drew a line from pole to pole and called it the first or prime meridian, or meridian of Greenwich, and then drew another line clear around the ball halfway between the poles, and called it Equator. Now you could locate your nugget by saying that it was a certain distance on the North Pole (north) side of the Equator and a certain distance on the left (west) or right (east) side of the prime meridian. (Fig. 512-A.)

That is the way geographers locate places on the earth's surface. Instead of saying a place is so many miles north or south of the Equator, or east or west of the prime meridian, they use a fraction of the distance around the earth. For a long time mathematicians have divided circles into 360 equal parts called *degrees*. Thus a quarter of a pie is 90 degrees along the edge of the crust, and a quarter of the way around the earth is 90 degrees.

The geographer locates Cairo, Egypt, by saying it is on a meridian 31 degrees east of the prime meridian and 30 degrees north of the Equator, on a line parallel to the Equator, called a *parallel of latitude*. Find Cairo in Figure 512-A. Geographers use the meridian that passes through the observatory of Greenwich (a part of London) as the prime meridian, and measure distance east and west of that in *degrees of longitude*, and distances north and south of the Equator in *degrees of latitude*. For more exact locations each degree is divided into 60 minutes and each minute into 60 seconds.

Degrees differ greatly in length. You can quickly see that $\frac{1}{360}$ of the distance around the earth at the Equator, where it is large, will be much more than $\frac{1}{360}$ of the distance around the earth near the pole. Degrees of latitude are almost the same length everywhere, about 69 miles.

LENGTHS OF DEGREES OF LONGITUDE AND OF THE DAY ON CERTAIN PARALLELS

| AT LATITUDE (DEGREES) | NUMBERS OF HOURS OR DAYS OF SUNSHINE— LONGEST DAY | STATUTE MILES |
|--------------------------|---|------------------|
| 0..... | 12h 08m | 69.172 |
| 10..... | 12h 43m | 68.129 |
| 20..... | 13h 21m | 65.026 |
| 30..... | 14h 05m | 59.956 |
| 40..... | 15h 01m | 53.063 |
| 50..... | 16h 23m | 44.552 |
| 60..... | 18h 53m | 34.674 |
| 70..... | 73 days | 23.729 |
| 80..... | 138 days | 12.051 |
| 90..... | 192 days | 0.000 |

The shape of the earth.

We say the earth is round like a ball; but it is not exactly round. Actually, it is slightly flattened because it spins so fast. The other planets are also flattened a little for the same reason. The earth turns round an imaginary central line called the axis, of which one end is the North Pole and the other end is the South Pole. It is so nearly round that the polar diameter (distance through the earth from pole to pole) is 7899.4 miles, while the equatorial diameter is 7926.7. Can you calculate the circumference at different latitudes? See the table. We know that the earth is round because we travel around it, and ships sailing away from us at sea go down gradually behind the horizon. The horizon at sea is circular; the shadow of the earth on the moon is circular. At different latitudes we see different stars.

Keeping time. Figure 512-A also shows us something about how we count time. The earth rotates on its axis from west to east, and every time it goes around once we are turned toward the sun (light) and away from the sun (dark) we call it a day, divided into 24 hours. In Figure 512-A we see at the right the rays of the sun, which are always lighting up one half of the earth and leaving the other half in shadow. In this figure the Greenwich meridian is the shadow line, or sunrise line. Therefore it is sunrise at Greenwich, and since the sun shines on both poles we know (Fig. 514-A) that it is about March 21 or September 21.

At noon the sun is at its highest point and shadows are then the shortest for that particular day. At that moment, the middle of the day, the sun is directly south of us.

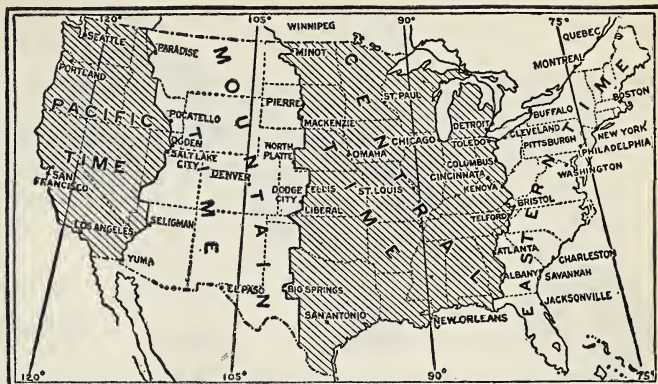


Fig. A. Map of the United States showing belts of standard time.

How fast does sunrise travel? In 24 hours it goes round the earth, 360 degrees. In one hour it therefore goes 15 degrees. How long does it take to go 1 degree?

Standard time. How shall we keep time on this whirling globe where the sunrise and noon travel westward many miles a minute? How many miles a minute? Since we have the habit of meeting trains, we need to agree on how we shall set our clocks. For convenience we divide the United States into bands or belts (Fig. 513-A) about 15 degrees wide. In the eastern belt everybody keeps 75th meridian time. In the central belt everybody keeps 90th meridian time. The line between the belts is irregular because it would be very inconvenient for the conductor of a train to change his time a few miles outside of a city like Columbus, Ohio, or Salt Lake City, Utah. Therefore we zigzag the edges for the sake of convenience. Every time a traveler going west crosses into a new time belt, he sets his watch backward one hour. If he goes eastward, he sets it forward one hour.

International date line. Suppose he went westward clear around the earth, setting his watch back an hour every fifteen degrees. When he reached home, he would be one day behind the calendars of the

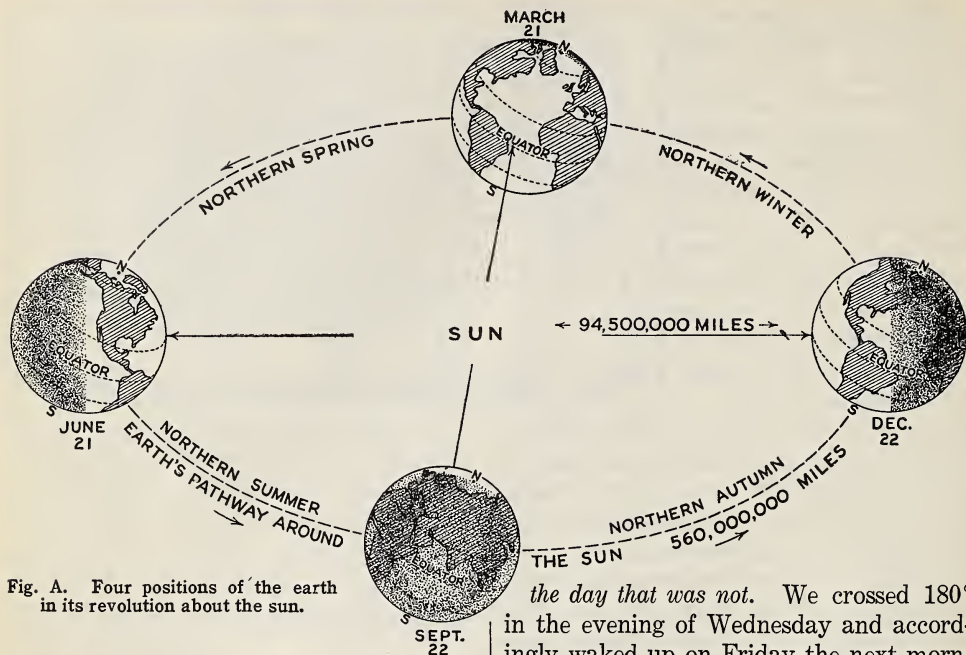


Fig. A. Four positions of the earth in its revolution about the sun.

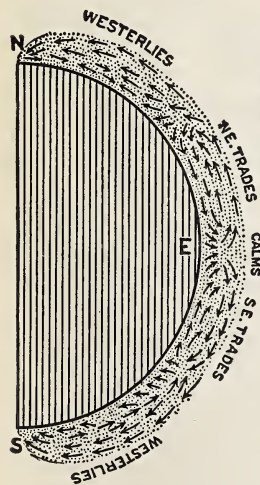


Fig. B. A cross section of one half of the earth and its atmosphere. The atmosphere is much exaggerated in height so that the arrows can show the direction of the air on the earth and above it.

home folks. Those twenty-four hours that he had lost by moving his watch back would have taken a day, and he would therefore say it was Saturday when it was really Sunday. To avoid this trouble, men have made an international date line out in the Pacific Ocean where it will make the least trouble. Every time you cross that line you move your calendar backward or forward one day. In my diary going west to Japan I have this entry, "Thursday,

the day that was not. We crossed 180° in the evening of Wednesday and accordingly waked up on Friday the next morning." The international date line zigzags a little for the same reason that our time-belt lines do.

Change of seasons. To understand our change of seasons, do the following: On a sheet of paper mark a place near the center and call it sun. Around this draw a line to show the path of the earth. Now stick a pin into the paper somewhere in your path of the earth. This pin represents the earth's axis. The flat sheet of paper represents the plane of the earth's path or orbit. The axis of the earth points to the same place in the sky all the time, and it is not perpendicular to the plane of the orbit. It is inclined $23\frac{1}{2}$ degrees away from the perpendicular. Look at Figure 514-A and see that the axis is slanting. Remember that the earth goes clear around the sun, and you can see that the North Pole is in darkness when it is inclined away from the sun during northern winter. On December 21 or 22, our shortest days, the

sun shines on the surface of the earth no farther north than the place marked by the Arctic Circle. At that time a place just south of the Arctic Circle has only a few minutes of sunshine each day, and places inside the Arctic Circle have many days with no sun at all.

When the earth is on the other side of the sun, June 21 or 22, the North Pole (Fig. 514-A) is inclined toward the sun, and the sun shines clear across it to the Arctic Circle on the other side. At this time a place just south of the Arctic Circle has only a few minutes daily when the sun cannot be seen, and places north of the Arctic Circle have many days when the sun does not set at all. This makes the Arctic tundra produce grass and many blooming plants. The Antarctic Circle is $23\frac{1}{2}$ degrees from the South Pole; the Arctic Circle the same distance from the North Pole.

The Tropic of Cancer, $23\frac{1}{2}$ degrees from the Equator, is the most northerly place on which the sun's rays fall perpendicularly in June. The Tropic of Capricorn is the same distance south of the Equator. Can you tell why?

Equinox. About March twenty-first and September twenty-first the sun shines on both poles (Fig. 514-A). The days and nights are everywhere of equal length, and for that reason we say it is *equinox*.

The zones. Geographers have divided the earth into belts called zones (Fig. 512-A) because of the differences in

sunshine at different seasons. The zone along the Equator between the Tropics



Fig. A. If the paper cover of your school globe were removed carefully, the continents would appear as on this drawing. Now pretend that you can straighten each meridian and you have Mercator's projection, as shown on Figure 515-B

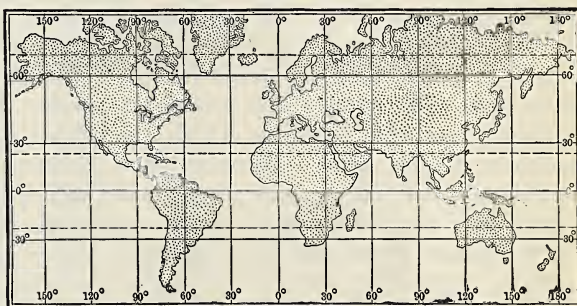


Fig. B. In 1569 Gerardus Mercator, a Flemish geographer, published the first map on "Mercator's projection" with parallels and meridians at right angles to each other. You can see by referring to Figure 515-A that Mercator's projection shows northern North America much wider than it should be. Greenland (827,000 square miles) appears to be larger than South America (7,073,000 square miles).

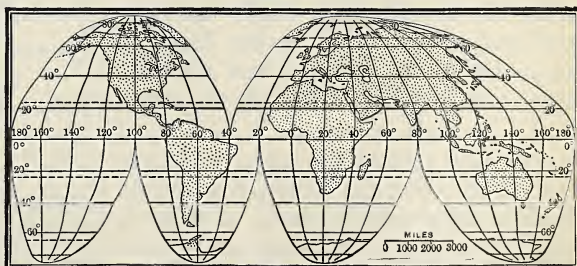


Fig. C. The "homographic projection" of John Paul Goode, 1916 Look at Figure 515-A and pretend you have pinched each continent together so that its parts join. That is what Doctor Goode did to make this map. The shapes of the continents and their relative sizes are much more accurate on this projection than on Mercator's.

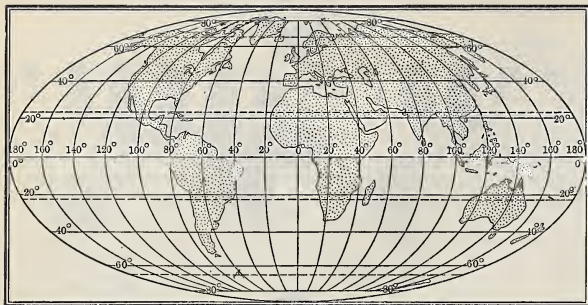


Fig. A. In 1805 Mollweide published a map of the world on which the meridians are ellipses. The shapes and relative sizes of the continents are more nearly accurate than Mercator's, but less accurate than Goode's.

of Cancer and Capricorn is called the *Torrid* (or *Equatorial*) Zone because of its heat. Around each pole there is a *Frigid* (or *Polar*) Zone, so named because of its cold. The Arctic Circle bounds the northern, and the Antarctic Circle the southern Frigid Zone. Between each Frigid and the Torrid Zone there is a *Temperate* (or *Intermediate*) Zone, so called because its average temperature is between that of the Torrid and that of the Frigid Zones. Find all the zones on Figures 514-A and 512-A. In which zone do you live? In which zone is it winter when we have summer?

The wind systems of the world. Examine the drawing (Fig. 514-B) carefully, and you will see that at the Equator, where the air is very hot and therefore light, it is ascending. (See edges of drawing.) At high elevations it turns and travels back toward the poles, while surface winds, the trade winds, flow toward the Equator to take its place. How many miles is it around the earth at 0° lat.? at 30° lat. (page 512)? When the slow-moving air at 30° starts toward the Equator it falls behind as does a man who steps onto a vehicle that is moving faster than he is. Therefore the northeast and southeast trade winds.

Just north of the Tropic of Cancer and again south of the Tropic of Capricorn is a region of descending air where there is so little wind that sailing vessels sometimes have trouble to sail along. Sailors call these places the *horse-latitude calms*.

North of the northern horse latitudes and south of the southern horse latitudes the wind blows from the west so much of the time that these zones are called the *prevailing westerlies*.

Ocean currents. As wind blows over water, it rubs against the surface. This rubbing or friction draws the water along with the wind. Thus the ocean has currents. Look at the map of ocean currents. What direction have the currents in the Atlantic and Pacific Oceans where the prevailing westerlies blow? where the trade winds blow? The currents in the Indian Ocean north of the Equator flow one way in winter and another in summer following the direction of the prevailing wind.

How do the North Atlantic and North Pacific currents help you understand why the climate is so much alike on the eastern edges of the two oceans and also on their western edges?

THINGS TO THINK ABOUT AND TO DO

1. With the sun directly overhead at the Tropic of Cancer where would one find the longest period of sunlight? the shortest? Use the globe.
2. At which place is the succession of day and night more favorable to man's activities, at Etah, Greenland, or at New York City?
3. What is the relation of the slant of the sun's rays to the intensity of its heating effect upon a given area?
4. Compare the total amount of sunlight received during a year at a point on the Equator and at either one of the poles.
5. In what latitudes do the highest civilizations seem to be found? Account for this fact.

STATISTICAL APPENDIX

I. COUNTRIES OF THE WORLD. Area in square miles, total population, population per square mile, value of trade with the United States, and value of total imports and exports.

| Country | Year | Area, Square Miles | Total Population (thousands) | Population per Square Mile | Millions of Dollars | | |
|--|------|-----------------------|------------------------------------|----------------------------------|---|---|------------------------------------|
| | | | | | 1928 Trade with United States | 1932 Trade with United States | Total Imports and Exports |
| NORTH AMERICA | | | | | | | |
| Alaska | 1930 | 586,400 | 177,500 | 0.1 | 104.4 | 49.8 | 50.3 |
| Bermuda | 1932 | 19 | 28 | 1,526.3 | 4.9 | 3.2 | 7.1 |
| Canada (land area) | 1931 | 3,542,049 | 10,374 | 2.9 | 1,312.0 | 380.0 | 840.8 |
| Alberta | 1931 | 250,925 | 732 | 2.9 | | | |
| British Columbia | 1931 | 353,416 | 694 | 2.0 | | | |
| Manitoba | 1931 | 231,926 | 700 | 3.0 | | | |
| New Brunswick | 1931 | 27,911 | 408 | 14.6 | | | |
| Northwest Territories | 1931 | 1,258,217 | 7 | 0.006 | | | |
| Nova Scotia | 1931 | 21,068 | 513 | 23.7 | | | |
| Ontario | 1931 | 365,880 | 3,432 | 9.4 | | | |
| Prince Edward Island | 1931 | 2,184 | 88 | 40.3 | | | |
| Quebec | 1931 | 583,895 | 2,874 | 4.9 | | | |
| Saskatchewan | 1931 | 240,000 | 922 | 3.8 | | | |
| Yukon Territory | 1931 | 206,427 | 4 | 0.02 | | | |
| Central America | | 212,012 | 13,118 | | | | |
| British Honduras | 1931 | 8,598 | 651 | 5.9 | 5.7 | 1.5 | 6.8 |
| Costa Rica | 1932 | 23,000 | 6,540 | 23.0 | 13.3 | 7.8 | 14.1 |
| Guatemala | 1932 | 42,364 | 2,195 | 52.4 | 24.5 | 7.0 | 18.2 |
| Honduras | 1930 | 46,250 | 860 | 18.6 | 21.9 | 18.3 | 26.0 |
| Nicaragua | 1930 | 49,500 | 925 | 18.7 | 11.8 | 5.1 | 8.0 |
| Panama | 1930 | 28,575 | 467 | 16.3 | 13.0 | 7.3 | 10.9 |
| Panama Canal Zone | 1931 | 549 | 42 | 71.9 | | | |
| Salvador | 1930 | 13,176 | 1,438 | 109.1 | 15.0 | 5.3 | 10.5 |
| Greenland | 1931 | 46,740 | 17 | | 0.4 | | 2.1 |
| Mexico | 1930 | 760,290 | 16,525 | 21.7 | 367.0 | 100.2 | 154.6 |
| Newfoundland | 1931 | 42,734 | 277 | 6.5 | 17.5 | 13.8 | 40.5 |
| Labrador | 1931 | 110,000 | 4 | 0.4 | | | |
| United States (land area) | 1932 | 2,973,776 | 124,822 | 42.0 | | | 2,933.8 |
| West Indies | | 95,800 | 12,045 | | | | |
| Bahama Islands | 1932 | 4,404 | 61 | 13.8 | | | 4.2 |
| Cuba | 1931 | 44,164 | 3,962 | 89.7 | 414.0 | 85.1 | 131.7 |
| Dominican Republic | 1932 | 19,332 | 1,275 | 64.7 | 28.4 | 7.5 | 19.0 |
| Haiti | 1929 | 10,204 | 2,550 | 249.9 | 13.5 | 5.8 | 14.7 |
| Jamaica | 1932 | 4,450 | 1,051 | 236.1 | 18.3 | 6.0 | 27.0 |
| Puerto Rico | 1931 | 3,435 | 1,574 | 458.2 | 186.3 | 123.1 | 132.5 |
| Virgin Islands | 1930 | 133 | 22 | 165.4 | 3.5 | 1.3 | 2.5 |
| British West Indies (including Jamaica) | 1931 | 12,611 | 2,023 | 160.4 | 141.5 | 14.7 | 86.4 |
| French West Indies | 1931 | 1,063 | 506 | 475.6 | | 2.4 | 29.0 |
| Netherlands West Indies | 1931 | 403 | 72 | 188.6 | | 30.7 | 129.8 |
| SOUTH AMERICA | | | | | | | |
| Argentina | 1931 | 1,079,965 | 85,000 | 10.8 | 260.7 | 58.4 | 546.1 |
| Bolivia | 1931 | 514,600 | 11,659 | 5.9 | 10.9 | 3.9 | 15.1 |
| Brazil | 1931 | 3,286,170 | 3,052 | 12.6 | 310.5 | 116.1 | 288.7 |
| Chile | 1932 | 286,396 | 41,478 | 15.2 | 107.7 | 11.7 | 44.6 |
| Colombia | 1932 | 444,100 | 4,402 | 18.9 | 146.6 | 63.9 | 96.1 |
| Ecuador | 1931 | 110,000 | 8,828 | 22.7 | 9.1 | 5.5 | 14.9 |
| Falkland Islands | 1931 | 5,618 | 2,500 | 0.5 | | | |
| Guiana, British | 1931 | 89,480 | 311 | 3.5 | 2.5 | 0.9 | 12.4 |
| Guiana, French | 1931 | 34,749 | 29 | 1.4 | 0.2 | 0.1 | 2.6 |
| Paraguay | 1930 | 176,000 | 852 | 4.8 | 2.3 | 0.5 | 11.3 |
| Peru | 1930 | 524,800 | 6,237 | 11.9 | 65.1 | 11.4 | 58.0 |
| Surinam (Netherlands Guiana) | 1931 | 54,305 | 155 | 2.9 | 2.6 | 1.3 | 4.0 |
| Uruguay | 1931 | 72,172 | 1,938 | 26.8 | 33.3 | 3.7 | 52.4 |
| Venezuela | 1932 | 393,976 | 3,262 | 8.2 | 63.3 | 30.7 | 118.0 |

| Country | Year | Area, Square Miles | Total Population (thousands) | Population per Square Mile | Millions of Dollars | | |
|--|------|-----------------------|------------------------------------|----------------------------------|---|---|------------------------------------|
| | | | | | 1928 Trade with United States | 1932 Trade with United States | Total Imports and Exports |
| EUROPE..... | | | 535,000 | | | | |
| Albania..... | 1930 | 10,629 | 1,003 | 94.4 | | 0.2 | 7.1 |
| Andorra..... | | 191 | 5 | 26.2 | | | |
| Austria..... | 1931 | 32,377 | 6,733 | 207.6 | 29.3 | 10.0 | 302.3 |
| Belgium..... | 1931 | 11,754 | 8,159 | 688.4 | 146.7 | 59.4 | 864.0 |
| Bulgaria..... | 1932 | 39,825 | 6,128 | 151.4 | 1.2 | 0.7 | 49.0 |
| Czechoslovakia..... | 1932 | 54,196 | 14,915 | 273.9 | 66.3 | 46.9 | 438.0 |
| Danzig..... | 1929 | 754 | 408 | 541.1 | | | |
| Denmark (excluding Faerøerne)..... | 1932 | 16,576 | 3,590 | 215.1 | 69.0 | 17.6 | 428.1 |
| Faerøerne (Faerøe Islands)..... | 1930 | 540 | 24 | 44.4 | | | |
| Estonia..... | 1933 | 18,358 | 1,124 | 61.0 | 4.0 | 1.4 | 21.3 |
| Finland..... | 1931 | 132,578 | 3,667 | 27.6 | 33.2 | 11.0 | 126.1 |
| France (total)..... | 1931 | 212,736 | 41,835 | 196.7 | 580.7 | 151.9 | 1,941.2 |
| Corsica..... | 1931 | 3,367 | 297 | 88.2 | | | |
| Germany..... | 1932 | 180,986 | 64,776 | 357.9 | 676.9 | 208.0 | 2,478.7 |
| Gibraltar (British)..... | 1931 | 2 | 21 | 10,686.0 | | | |
| Great Britain and Northern Ireland..... | 1931 | 94,281 | 46,189 | 489.9 | 1,195.0 | 347.1 | 3,924.0 |
| England..... | 1931 | 50,327 | 37,355 | 742.2 | | | |
| Scotland..... | 1931 | 30,405 | 4,843 | 159.5 | | | |
| Wales..... | 1931 | 8,016 | 2,593 | 323.5 | | | |
| Northern Ireland..... | 1931 | 5,237 | 1,257 | 240.0 | | | |
| Channel Islands..... | 1931 | 75 | 93 | 1,240.8 | | | |
| Isle of Man..... | 1931 | 221 | 49 | 223.2 | | | |
| Greece (total)..... | 1932 | 50,270 | 6,483 | 127.3 | 36.5 | 13.1 | 65.0 |
| Crete..... | 1928 | 3,195 | 386 | 121.1 | | | |
| Hungary..... | 1932 | 35,875 | 8,781 | 243.5 | 4.9 | 2.9 | 116.4 |
| Iceland..... | 1930 | 39,709 | 109 | 2.7 | 0.3 | 0.4 | 12.3 |
| Irish Free State..... | 1932 | 26,601 | 2,974 | 111.2 | 24.8 | 5.0 | 243.7 |
| Italy (total)..... | 1932 | 119,744 | 41,814 | 344.3 | 289.1 | 89.7 | 773.0 |
| Sardinia..... | 1931 | 9,299 | 973 | 104.6 | | | |
| Sicily..... | 1931 | 9,935 | 3,897 | 392.2 | | | |
| Latvia..... | 1932 | 25,402 | 1,920 | 75.5 | 2.4 | 0.8 | 34.9 |
| Liechtenstein..... | 1930 | 65 | 10 | 157.1 | | | |
| Lithuania..... | 1933 | 21,490 | 2,422 | 111.4 | 1.9 | 0.7 | 35.6 |
| Luxembourg..... | 1931 | 999 | 300 | 301.3 | | | |
| Malta (British)..... | 1931 | 122 | 242 | 1,980.5 | | | |
| Monaco..... | 1928 | 8 | 25 | 3,125.0 | | | 12.9 |
| Netherlands..... | 1933 | 13,214 | 8,183 | 607.7 | 133.8 | 46.2 | 862.5 |
| Norway..... | 1932 | 119,148 | 2,831 | 23.6 | 56.1 | 24.9 | 228.6 |
| Poland..... | 1932 | 149,957 | 32,176 | 214.2 | 43.9 | 12.8 | 218.3 |
| Portugal (total)..... | 1931 | 35,880 | 6,717 | 187.2 | 15.2 | 10.1 | 81.5 |
| Azores..... | 1930 | 924 | 254 | 275.0 | | | |
| Madeira Islands..... | 1930 | 314 | 210 | 675.8 | | | |
| Rumania..... | 1931 | 113,887 | 18,166 | 158.3 | | 3.7 | 170.8 |
| San Marino..... | 1932 | 38 | 14 | 368.4 | | | |
| Spain (total)..... | 1932 | 194,237 | 23,656 | 121.8 | 118.3 | 41.2 | 330.6 |
| Balearic Isles..... | 1932 | 1,908 | 368 | 192.8 | | | |
| Canary Islands..... | 1932 | 2,807 | 565 | 201.3 | | | |
| Sweden..... | 1932 | 158,510 | 6,190 | 38.7 | 100.6 | 78.6 | 388.3 |
| Switzerland..... | 1932 | 15,944 | 4,120 | 256.2 | 82.8 | 32.8 | 478.1 |
| Turkey in Europe (see Asia)..... | 1930 | 9,257 | 1,072 | 115.8 | | | |
| U. S. S. R. (Soviet Union) (see Asia)..... | 1933 | 8,244,228 | 165,700 | 19.7 | 86.9 | 25.1 | 650.2 |
| Russia S. F. S. R. (Europe and Asia)..... | 1931 | 7,628,546 | 110,933 | 14.5 | | | |
| Transcaucasian S. F. S. R..... | 1931 | 71,232 | 6,427 | 90.2 | | | |
| White Russia S. S. R..... | 1931 | 48,954 | 5,246 | 107.2 | | | |
| Ukraine S. S. R..... | 1931 | 174,413 | 31,403 | 180.0 | | | |
| Yugoslavia..... | 1931 | 96,010 | 13,931 | 145.0 | 5.3 | 2.6 | 97.0 |
| ASIA..... | | | 1,100,000 | | | | |
| Afghanistan (estimated)..... | | 250,000 | 11,000 | 27.9 | | | |
| Arabia (estimated)..... | | 1,000,000 | 7,000 | 7.0 | | | |
| Aden Protectorate (British)..... | | 9,000 | 100 | 11.1 | 3.5 | 0.6 | 26.3 |
| Oman..... | | 82,000 | 500 | 6.1 | | | |
| Saudi..... | | | 4,000 | | | | |

STATISTICAL APPENDIX

A-3

| Country | Year | Area, Square Miles | Total Population (thousands) | Population per Square Mile | Millions of Dollars | | |
|--|------|-----------------------|------------------------------------|----------------------------------|---|---|------------------------------------|
| | | | | | 1928 Trade with United States | 1932 Trade with United States | Total Imports and Exports |
| ASIA—Continued | | | | | | | |
| Yemen..... | | 75,000 | 2,300 | 30.7 | ..... | ..... | ..... |
| Bhutan..... | | 18,000 | 300 | 16.7 | ..... | ..... | ..... |
| Ceylon..... | 1931 | 25,332 | 5,313 | 209.7 | 51.6 | 11.5 | 101.5 |
| Chinese Republic..... | 1932 | 4,300,000 | 474,787 | 110.4 | 199.1 | 111.9 | 533.5 |
| China Proper..... | 1930 | 1,555,000 | 462,387 | 297.4 | ..... | ..... | ..... |
| Manchuria (Manchoukuo)..... | 1930 | 364,000 | 26,623 | 73.1 | ..... | ..... | ..... |
| Mongolia..... | 1930 | 1,368,000 | 6,160 | 4.5 | ..... | ..... | ..... |
| Sinkiang (Chinese Turkestan)..... | 1930 | 550,000 | 2,552 | 4.6 | ..... | ..... | ..... |
| Tibet..... | 1930 | 463,000 | 3,722 | 8.0 | ..... | ..... | ..... |
| Cyprus..... | 1931 | 3,584 | 348 | 97.1 | ..... | ..... | 7.9 |
| French Indo-China..... | 1931 | 284,900 | 21,600 | 75.8 | 1.6 | 1.4 | 77.9 |
| India and Dependencies..... | 1931 | 1,819,000 | 352,987 | 194.1 | 188.2 | 54.2 | 716.3 |
| British India..... | 1931 | 1,107,968 | 271,749 | 245.3 | ..... | ..... | ..... |
| Baluchistan..... | 1931 | 134,638 | 869 | 6.4 | ..... | ..... | ..... |
| Burma..... | 1931 | 233,492 | 14,667 | 62.4 | ..... | ..... | ..... |
| Native States..... | 1931 | 711,032 | 81,238 | 114.3 | ..... | ..... | ..... |
| Iraq..... | 1931 | 143,250 | 3,250 | 22.7 | ..... | 3.0 | 30.9 |
| Japanese Empire..... | 1930 | 260,514 | 90,395 | 347.0 | 714.7 | 272.9 | 989.1 |
| Japan Proper..... | 1933 | 147,462 | 66,297 | 449.6 | ..... | 268.5 | 798.7 |
| Chosen (Korea)..... | 1930 | 85,228 | 21,058 | 247.1 | ..... | 1.5 | 177.6 |
| Karafuto (Sakhalin)..... | 1930 | 13,934 | 295 | 21.2 | ..... | ..... | ..... |
| Taiwan (Formosa)..... | 1930 | 13,840 | 4,715 | 331.9 | ..... | 2.9 | 12.8 |
| Malaya, British..... | 1931 | 52,603 | 4,354 | 86.1 | ..... | 32.2 | 285.0 |
| Federated Malay States..... | 1931 | 27,430 | 1,713 | 62.4 | ..... | ..... | ..... |
| Non-federated Malay States..... | 1931 | 22,040 | 1,527 | 69.3 | ..... | ..... | ..... |
| Straits Settlements..... | 1931 | 1,535 | 1,114 | 725.7 | ..... | ..... | ..... |
| British North Borneo..... | 1931 | 31,106 | 270 | 8.7 | ..... | ..... | ..... |
| Brunei..... | 1931 | 2,500 | 39 | 15.6 | ..... | ..... | ..... |
| Sarawak..... | 1931 | 50,000 | 600 | 12.0 | ..... | ..... | ..... |
| Nepal..... | | 54,000 | 5,600 | 103.7 | ..... | ..... | ..... |
| Netherland India..... | 1930 | 733,494 | 60,731 | 82.8 | 122.3 | 36.3 | 366.8 |
| Borneo..... | 1930 | 206,115 | 2,195 | 10.6 | ..... | ..... | ..... |
| Celebes..... | 1930 | 73,180 | 4,227 | 57.8 | ..... | ..... | ..... |
| Java and Madoera (Madura)..... | 1930 | 51,219 | 41,720 | 814.5 | ..... | ..... | ..... |
| New Guinea and Molucca Islands..... | 1930 | 192,453 | 893 | 4.6 | ..... | ..... | ..... |
| Sumatra..... | 1930 | 163,138 | 7,661 | 47.0 | ..... | ..... | ..... |
| Other Islands..... | 1930 | 47,389 | 4,035 | 85.1 | ..... | ..... | ..... |
| Palestine (British Mandate)..... | 1931 | 8,880 | 1,035 | 116.6 | 1.3 | 1.8 | 36.4 |
| Persia..... | 1930 | 628,000 | 10,000 | 15.9 | 9.5 | 3.8 | 89.0 |
| Philippine Islands (U. S.)..... | 1931 | 114,400 | 12,419 | 108.6 | 193.7 | 125.8 | 174.7 |
| Siam..... | 1931 | 200,234 | 11,940 | 58.4 | 2.9 | 1.6 | 75.6 |
| Syria and Lebanon (French Man- date)..... | 1931 | 77,220 | 2,768 | 35.8 | 6.5 | 2.3 | 44.8 |
| Transjordanian..... | 1931 | 15,444 | 270 | 17.5 | ..... | ..... | ..... |
| Turkey (Europe and Asia)..... | 1930 | 294,492 | 14,100 | 47.9 | 17.1 | 6.8 | 88.6 |
| Turkey in Asia (see Europe)..... | 1930 | 285,235 | 13,028 | 42.9 | ..... | ..... | ..... |
| U. S. S. R. (Soviet Union) (see Europe)..... |  |  |  |  | ..... | ..... | ..... |
| Tadzhik S. S. R..... | 1931 | 54,826 | 1,174 | 21.4 | ..... | ..... | ..... |
| Turcoman S. S. R..... | 1931 | 189,658 | 1,138 | 6.0 | ..... | ..... | ..... |
| Uzbek S. S. R..... | 1931 | 75,598 | 4,685 | 62.0 | ..... | ..... | ..... |
| AUSTRALIA, NEW ZEALAND, AND LARGER ISLANDS OF THE PACIFIC.. | | | | | | | |
| Australia..... | 1931 | 2,974,581 | 6,526 | 2.2 | 262.0 | 33.3 | 455.8 |
| Federal Territory..... | 1931 | 940 | 9 | 2.7 | ..... | ..... | ..... |
| New South Wales..... | 1931 | 309,432 | 2,518 | 6.8 | ..... | ..... | ..... |
| Northern Territory..... | 1931 | 523,620 | 4 | 0.01 | ..... | ..... | ..... |
| Queensland..... | 1931 | 670,500 | 964 | 1.1 | ..... | ..... | ..... |
| South Australia..... | 1931 | 380,070 | 585 | 1.3 | ..... | ..... | ..... |
| Tasmania..... | 1931 | 26,215 | 223 | 8.2 | ..... | ..... | ..... |
| Victoria..... | 1931 | 87,884 | 1,801 | 17.4 | ..... | ..... | ..... |
| Western Australia..... | 1931 | 975,920 | 422 | 0.3 | ..... | ..... | ..... |
| Fiji Islands (British)..... | 1932 | 7,435 | 186 | 24.9 | ..... | ..... | 8.4 |

| Country | Year | Area, Square Miles | Total Population (thousands) | Population per Square Mile | Millions of Dollars | | |
|---|------|-----------------------|------------------------------------|----------------------------------|---|---|------------------------------------|
| | | | | | 1928 Trade with United States | 1932 Trade with United States | Total Imports and Exports |
| AUSTRALIA, NEW ZEALAND—Continued | | | | | | | |
| Guam (U. S.)..... | 1930 | 206 | 19 | 92.2 | 0.3 | 0.2 | 0.5 |
| Hawaiian Islands (U. S.)..... | 1931 | 6,407 | 382 | 59.6 | 192.1 | 141.2 | 147.1 |
| New Caledonia (French)..... | 1931 | 7,202 | 57 | 7.6 | ..... | ..... | ..... |
| New Guinea, Territory of (Austra- lian Mandate)..... | 1931 | 93,460 | 390 | 4.2 | ..... | ..... | ..... |
| Bismark Archipelago..... | 1931 | 19,660 | 143 | 7.2 | ..... | ..... | ..... |
| German Solomon Islands..... | 1931 | 4,100 | 40 | 9.8 | ..... | ..... | ..... |
| Northeastern New Guinea..... | 1931 | 69,700 | 207 | 3.0 | ..... | ..... | ..... |
| New Hebrides (British)..... | 1931 | 4,633 | 63 | 13.6 | ..... | ..... | ..... |
| New Zealand..... | 1932 | 103,415 | 1,455 | 14.7 | 52.3 | 12.8 | 189.8 |
| Papua, Territory of (Australian Mandate)..... | 1930 | 90,540 | 276 | 3.1 | ..... | ..... | ..... |
| Samoa, Western (New Zealand Mandate)..... | 1932 | 1,260 | 46 | 36.5 | ..... | ..... | ..... |
| Samoa Islands (U. S.)..... | 1930 | 76 | 10 | 132.3 | ..... | ..... | ..... |
| Solomon Islands (British Protec- torate)..... | 1931 | 14,600 | 94 | 6.4 | ..... | ..... | ..... |
| Tonga (Friendly Island) (British)... | 1931 | 390 | 29 | 74.4 | ..... | ..... | ..... |
| AFRICA..... | | | 150,000 | ..... | ..... | ..... | ..... |
| Independent Countries: | | | | | | | |
| Egypt..... | 1932 | 386,000 | 14,945 | ..... | 45.2 | 7.9 | 191.4 |
| Egypt (excluding desert)..... | 1932 | 13,600 | 14,945 | 1,098.9 | ..... | ..... | ..... |
| *Ethiopia (estimated)..... | 1930 | 347,490 | 10,000 | 28.8 | ..... | 0.3 | ..... |
| Liberia (estimated)..... | 1930 | 46,332 | 2,500 | 54.0 | 1.1 | 0.1 | 1.5 |
| International (British, French, Ital- ian, Spanish): | | | | | | | |
| Tangier Zone of Morocco..... | 1931 | 225 | 51 | 226.7 | ..... | ..... | ..... |
| Belgian Sphere of Influence: | | | | | | | |
| Belgian Congo..... | 1931 | 920,895 | 9,610 | 10.4 | 16.3 | 1.7 | 35.4 |
| Ruanda-Urundi (Belgian Man- date)..... | 1929 | 20,120 | 3,485 | 173.3 | ..... | ..... | ..... |
| British Territory and Sphere of In- fluence: | | | | | | | |
| Anglo-Egyptian Sudan..... | 1930 | 1,008,100 | 5,606 | 5.6 | ..... | ..... | 26.0 |
| Basutoland..... | 1931 | 11,716 | 650 | 55.5 | ..... | ..... | ..... |
| Bechuanaland..... | 1921 | 275,000 | 153 | 0.6 | ..... | ..... | ..... |
| British East Africa..... | 1931 | 686,956 | 15,894 | 23.1 | ..... | ..... | ..... |
| Kenya..... | 1931 | 225,100 | 3,041 | 13.5 | ..... | ..... | 47.5 |
| Tanganyika (Mandate)..... | 1931 | 366,632 | 5,064 | 15.0 | ..... | ..... | 14.3 |
| Uganda Protectorate..... | 1931 | 94,204 | 3,554 | 37.7 | ..... | ..... | (see Kenya) |
| Zanzibar Protectorate..... | 1931 | 1,020 | 235 | ..... | ..... | ..... | 6.2 |
| Pemba..... | 1931 | 380 | 97 | 255.3 | ..... | ..... | ..... |
| Zanzibar..... | 1931 | 640 | 138 | 215.6 | ..... | ..... | ..... |
| British Somaliland..... | 1931 | 68,000 | 345 | 5.1 | ..... | ..... | ..... |
| British West Africa..... | 1931 | 499,623 | 16,278 | 32.6 | ..... | ..... | ..... |
| Gambia..... | 1931 | 4,002 | 200 | 50.0 | ..... | ..... | 2.3 |
| Gold Coast, Ashanti and Northern Territory..... | 1931 | 91,690 | 3,124 | 34.1 | ..... | 7.3 | 40.1 |
| Nigeria..... | 1931 | 372,674 | 19,928 | 53.4 | ..... | 4.9 | 58.4 |
| Northern Nigeria..... | 1931 | 281,778 | 11,435 | 40.6 | ..... | ..... | ..... |
| Southern Nigeria..... | 1931 | 90,896 | 8,493 | 93.4 | ..... | ..... | ..... |
| Sierre Leone..... | 1931 | 30,931 | 1,672 | 54.1 | ..... | ..... | 7.8 |
| Cameroons (Mandate)..... | 1931 | 34,236 | 700 | 20.4 | ..... | ..... | ..... |
| Mauritius..... | 1931 | 720 | 393 | 545.8 | ..... | ..... | 14.4 |
| Northern Rhodesia..... | 1931 | 287,950 | 1,345 | 4.6 | ..... | ..... | ..... |
| Nyasaland Protectorate..... | 1931 | 47,949 | 1,603 | 33.4 | ..... | ..... | 4.9 |
| St. Helena..... | 1931 | 47 | 4 | 85.1 | ..... | ..... | ..... |
| Southern Rhodesia..... | 1931 | 150,344 | 1,109 | 7.4 | ..... | 1.6 | 23.4 |
| South West Africa (Union of South Africa Mandate)..... | 1931 | 322,393 | 241 | 0.8 | ..... | ..... | 14.0 |
| Swaziland..... | 1931 | 6,704 | 125 | 18.6 | ..... | ..... | ..... |
| Togoland (Mandate)..... | 1931 | 13,240 | 294 | 22.2 | ..... | ..... | ..... |

*May, 1936, brought under the control of Italy.

| Country | Year | Area, Square Miles | Total Population (thousands) | Population per Square Mile | Millions of Dollars | | | |
|--|-------|-----------------------|------------------------------------|----------------------------------|---|---|------------------------------------|--|
| | | | | | 1928 Trade with United States | 1932 Trade with United States | Total Imports and Exports | |
| AFRICA—Continued | | | | | | | | |
| Union of South Africa..... | 1932 | 471,917 | 8,251 | 17.5 | 62.8 | 22.2 | 251.8 | |
| Cape of Good Hope..... | 1932 | 276,536 | 3,164 | 11.4 | ..... | ..... | ..... |  |
| Natal..... | 1932 | 35,284 | 1,721 | 48.7 | ..... | ..... | ..... |  |
| Orange Free State..... | 1932 | 49,647 | 762 | 15.3 | ..... | ..... | ..... |  |
| Transvaal..... | 1932 | 110,450 | 2,604 | 23.6 | ..... | ..... | ..... |  |
| French Sphere of Influence: | | | | | | | | |
| Algeria..... | 1931 | 222,206 | 6,553 | 29.5 | 18.2 | 1.4 | 314.3 | |
| Cameroon (Mandate)..... | 1931 | 166,489 | 2,192 | 13.2 | ..... | ..... | 6.1 | |
| French Equatorial Africa..... | 1931 | 915,057 | 3,192 | 3.4 | ..... | ..... | 13.4 | |
| French West Africa..... | 1931 | 1,799,100 | 14,576 | 8.1 | ..... | ..... | 40.0 | |
| Dakar and Dependencies..... | 1931 | 61 | 54 | 885.0 | ..... | ..... | ..... |  |
| Dahomey..... | 1931 | 47,142 | 1,112 | 23.5 | ..... | ..... | ..... |  |
| French Guinea..... | 1931 | 96,852 | 2,237 | 23.0 | ..... | ..... | ..... |  |
| French Sudan..... | 1931 | 561,303 | 2,856 | 5.0 | ..... | ..... | ..... |  |
| Ivory Coast..... | 1931 | 125,067 | 1,866 | 14.9 | ..... | ..... | ..... |  |
| Mauritania..... | 1931 | 322,335 | 324 | 1.0 | ..... | ..... | ..... |  |
| Niger..... | 1931 | 455,405 | 1,543 | 3.3 | ..... | ..... | ..... |  |
| Senegal..... | 1931 | 77,750 | 1,584 | 20.3 | ..... | ..... | ..... |  |
| Upper Volta..... | 1931 | 113,185 | 3,000 | 26.4 | ..... | ..... | ..... |  |
| Madagascar..... | 1931 | 238,013 | 3,759 | 15.7 | 0.5 | 0.4 | 26.0 | |
| Morocco..... | 1931 | 162,162 | 5,057 | 31.2 | 4.0 | 5.4 | 96.9 | |
| Somali Coast..... | 1931 | 8,880 | 69 | 7.8 | ..... | ..... | 18.2 | |
| Togoland (Mandate)..... | 1931 | 20,077 | 750 | 37.3 | ..... | ..... | ..... |  |
| Tunisia..... | 1931 | 48,332 | 2,411 | 49.9 | 4.0 | 2.5 | 118.3 | |
| Italian Sphere of Influence: | | | | | | | | |
| Eritrea..... | 1931 | 45,754 | 622 | 13.5 | ..... | ..... | ..... |  |
| Italian Somaliland..... | 1931 | 194,000 | 1,011 | 5.2 | ..... | ..... | ..... |  |
| Libya..... | 1931 | 633,100 | 706 | 1.1 | ..... | ..... | ..... |  |
| Cirenaica..... | 1931 | 285,640 | 165 | 0.6 | ..... | ..... | ..... |  |
| Tripolitania..... | 1931 | 347,500 | 541 | 1.6 | ..... | ..... | ..... |  |
| Portuguese Sphere of Influence: | | | | | | | | |
| Angola (Portuguese West Africa)..... | 1931 | 486,079 | 4,182 | 8.6 | ..... | ..... | ..... |  |
| Mozambique (Portuguese East Africa)..... | 1931 | 297,894 | 3,996 | 13.4 | ..... | 3.5 | 19.5 | |
| Portuguese Guinea..... | 1930 | 13,944 | 365 | 26.2 | ..... | ..... | ..... |  |
| Spanish Sphere of Influence: | | | | | | | | |
| Rio de Oro, Adrar and Ifni..... | 1927 | 110,165 | 22 | 0.2 | ..... | ..... | ..... |  |
| Spanish Guinea..... | ..... | 10,036 | 140 | 13.9 | ..... | ..... | ..... |  |
| Spanish Morocco..... | 1931 | 13,125 | 717 | 54.6 | ..... | ..... | ..... |  |

II. PIG IRON PRODUCTION (thousands of long tons)

| Country | 1870 | 1910 | 1929 | 1932 |
|---------------------------|------|------|------|------|
| United States..... | 1.7 | 27.9 | 42.3 | 8.8 |
| Germany..... | 1.2 | 12.9 | 13.1 | 3.9 |
| France..... | 1.2 | 4.0 | 10.2 | 5.4 |
| United Kingdom..... | 6.0 | 10 | 7.6 | 3.6 |
| Belgium..... | 0.6 | 1.8 | 4.0 | 2.7 |
| U. S. S. R. (Russia)..... | 0.3 | 3.0 | 4.2 | 6.1 |

III. SULPHUR PRODUCTION BY COUNTRIES (Thousand tons)

| Country | 1900 | 1931 |
|--------------------|------|-------|
| United States..... | 3 | 2,129 |
| Italy..... | 535 | 348 |
| Japan..... | 14 | 60 |
| Chile..... | 2 | 14 |
| Spain..... | 1 | 10 |
| World (total)..... | 555 | 2,561 |

IV. PRODUCTION OF COAL BY LEADING STATES

(Million tons)

| State | 1910 | 1930 | Total, End of 1930 |
|-----------------------|------|------|--------------------------|
| <i>Bituminous:</i> | | | |
| Pennsylvania..... | 151 | 124 | 5,234 |
| West Virginia..... | 62 | 121 | 2,535 |
| Illinois..... | 46 | 54 | 2,102 |
| Kentucky..... | 15 | 51 | 925 |
| Ohio..... | 34 | 23 | 1,191 |
| Indiana..... | 18 | 16 | 614 |
| Alabama..... | 16 | 16 | 557 |
| Total bituminous..... | 417 | 468 | 15,932 |
| <i>Anthracite:</i> | | | |
| Pennsylvania..... | 84 | 69 | 3,862 |
| Grand total..... | 502 | 537 | 19,793 |

V. AREA AND POPULATION OF THE STATES OF THE UNITED STATES, THE OCCUPATIONS OF THEIR PEOPLE, AND THE VALUE OF THEIR CROPS AND MANUFACTURED PRODUCTS. Dates of admission to the Union are given in the first column. Value of all farm crops expressed in millions of dollars. Amounts of \$500,000 and over are counted as \$1,000,000.

| STATE | Land Area, Sq. Miles, 1930 | Population per Sq. Mile in 1930 | Population in 1930, in Thousands | Population in 1920, in Thousands | Distribution of Persons Over 10 Years of Age in Gainful Occupations | | | | Value of All Farm Crops (Million Dollars) | Value of Manufactured Products (Million Dollars) |
|---|----------------------------|---------------------------------|----------------------------------|----------------------------------|---|--|---|------------------------|---|--|
| | | | | | Total Persons Occupied, in Thousands | Percentage of Total for Each Occupational Class | | | | |
| | | | | | | Agriculture, Forestry, Fishing, and Animal Husbandry | Manufacturing and Mechanical Industries | Extraction of Minerals | | |
| Alabama (1819)..... | 51,279 | 51.6 | 2,646 | 2,348 | 1,026 | 49 | 18 | 3 | 252 | 560.4 |
| Arizona (1912)..... | 113,810 | 3.8 | 436 | 334 | 165 | 24 | 17 | 11 | 43 | 200.0 |
| Arkansas (1836)..... | 52,525 | 35.3 | 1,854 | 1,752 | 668 | 57 | 11 | 1 | 254 | 210.9 |
| California (1850)..... | 155,652 | 36.5 | 5,677 | 3,427 | 2,501 | 14 | 25 | 2 | 735 | 3,103.3 |
| Colorado (1876)..... | 103,658 | 10.0 | 1,036 | 940 | 403 | 27 | 17 | 5 | 159 | 306.1 |
| Connecticut (1789)..... | 4,820 | 333.4 | 1,607 | 1,381 | 677 | 6 | 50 | .. | 65 | 1,471.9 |
| Delaware (1789)..... | 1,965 | 121.3 | 238 | 223 | 98 | 18 | 36 | .. | 27 | 149.6 |
| District of Columbia ¹ | 62 | 7,852.7 | 487 | 438 | 244 | .. | 17 | .. | 1 | 89.0 |
| Florida (1845)..... | 54,861 | 26.8 | 1,468 | 968 | 599 | 25 | 21 | .. | 111 | 232.4 |
| Georgia (1789)..... | 58,725 | 49.5 | 2,909 | 2,896 | 1,162 | 43 | 20 | .. | 279 | 722.5 |
| Idaho (1890)..... | 83,354 | 5.3 | 455 | 432 | 162 | 32 | 13 | 4 | 134 | 96.4 |
| Illinois (1818)..... | 56,043 | 136.2 | 7,631 | 6,485 | 3,185 | 11 | 34 | 2 | 559 | 6,282.1 |
| Indiana (1816)..... | 36,045 | 89.8 | 3,239 | 2,930 | 1,251 | 20 | 35 | 2 | 319 | 2,539.9 |
| Iowa (1846)..... | 55,586 | 44.5 | 2,471 | 2,404 | 913 | 36 | 17 | 1 | 656 | 898.2 |
| Kansas (1861)..... | 81,774 | 23.0 | 1,881 | 1,769 | 694 | 33 | 16 | 3 | 405 | 751.6 |
| Kentucky (1792)..... | 40,181 | 65.1 | 2,615 | 2,417 | 907 | 40 | 17 | 7 | 240 | 502.6 |
| Louisiana (1812)..... | 45,409 | 46.3 | 2,102 | 1,799 | 816 | 38 | 18 | 1 | 173 | 685.0 |
| Maine (1820)..... | 29,895 | 26.7 | 797 | 768 | 309 | 20 | 33 | 1 | 110 | 391.8 |
| Maryland (1789)..... | 9,941 | 164.1 | 1,632 | 1,450 | 673 | 13 | 33 | 1 | 107 | 1,119.1 |
| Massachusetts (1789)..... | 8,039 | 528.6 | 4,250 | 3,852 | 1,814 | 4 | 46 | .. | 84 | 3,392.2 |
| Michigan (1837)..... | 57,480 | 84.2 | 4,842 | 3,668 | 1,927 | 14 | 43 | 1 | 309 | 4,656.7 |
| Minnesota (1858)..... | 80,858 | 31.7 | 2,564 | 2,387 | 993 | 31 | 20 | 1 | 496 | 1,173.2 |
| Mississippi (1817)..... | 46,362 | 43.4 | 2,010 | 1,791 | 845 | 67 | 9 | .. | 314 | 220.9 |
| Missouri (1821)..... | 68,727 | 52.8 | 3,629 | 3,404 | 1,458 | 26 | 25 | 1 | 359 | 1,917.2 |
| Montana (1889)..... | 146,131 | 3.7 | 538 | 549 | 216 | 38 | 12 | 8 | 117 | 271.1 |
| Nebraska (1867)..... | 76,808 | 17.9 | 1,378 | 1,296 | 507 | 39 | 14 | .. | 379 | 484.2 |
| Nevada (1864)..... | 109,821 | 0.8 | 91 | 77 | 43 | 21 | 13 | 14 | 14 | 33.7 |
| New Hampshire (1789)..... | 9,031 | 51.5 | 465 | 443 | 193 | 13 | 46 | .. | 31 | 332.5 |
| New Jersey (1789)..... | 7,514 | 537.8 | 4,041 | 3,156 | 1,712 | 4 | 43 | .. | 110 | 3,937.2 |
| New Mexico (1912)..... | 122,503 | 3.5 | 423 | 360 | 143 | 42 | 11 | 6 | 45 | 21.7 |
| New York (1789)..... | 47,654 | 264.2 | 12,588 | 10,385 | 5,523 | 5 | 36 | .. | 461 | 6,554.3 |
| North Carolina (1789)..... | 48,740 | 65.0 | 3,170 | 2,559 | 1,141 | 45 | 25 | .. | 312 | 1,311.9 |
| North Dakota (1889)..... | 70,183 | 9.7 | 681 | 647 | 240 | 56 | 7 | .. | 225 | 55.3 |
| Ohio (1803)..... | 40,740 | 163.1 | 6,647 | 5,759 | 2,616 | 12 | 40 | 2 | 409 | 6,027.9 |
| Oklahoma (1907)..... | 69,414 | 34.5 | 2,396 | 2,028 | 828 | 37 | 14 | 7 | 318 | 455.9 |
| Oregon (1859)..... | 95,607 | 10.0 | 954 | 783 | 410 | 25 | 24 | 1 | 136 | 411.8 |
| Pennsylvania (1789)..... | 44,832 | 214.8 | 9,631 | 8,720 | 3,722 | 7 | 39 | 9 | 397 | 7,443.9 |
| Rhode Island (1789)..... | 1,067 | 644.3 | 687 | 604 | 297 | 3 | 55 | .. | 11 | 666.4 |
| South Carolina (1789)..... | 30,495 | 57.0 | 1,739 | 1,684 | 688 | 51 | 21 | .. | 164 | 385.9 |
| South Dakota (1889)..... | 76,868 | 9.0 | 693 | 637 | 248 | 53 | 9 | 1 | 227 | 97.7 |
| Tennessee (1796)..... | 41,687 | 62.8 | 2,617 | 2,338 | 958 | 40 | 21 | 2 | 255 | 730.5 |
| Texas (1845)..... | 262,398 | 22.2 | 5,825 | 4,663 | 2,207 | 38 | 16 | 2 | 767 | 1,450.2 |
| Utah (1896)..... | 82,184 | 6.2 | 508 | 449 | 170 | 24 | 19 | 7 | 60 | 214.6 |
| Vermont (1791)..... | 9,124 | 39.4 | 360 | 352 | 141 | 28 | 28 | 2 | 63 | 143.5 |
| Virginia (1789)..... | 40,262 | 60.2 | 2,422 | 2,309 | 880 | 32 | 23 | 2 | 225 | 745.9 |
| Washington (1889)..... | 66,836 | 23.4 | 1,563 | 1,357 | 665 | 21 | 26 | 1 | 215 | 795.6 |
| West Virginia (1863)..... | 24,022 | 72.0 | 1,729 | 1,464 | 570 | 22 | 21 | 21 | 83 | 513.0 |
| Wisconsin (1848)..... | 55,256 | 53.2 | 2,939 | 2,632 | 1,130 | 26 | 33 | .. | 517 | 2,156.7 |
| Wyoming (1890)..... | 97,548 | 2.3 | 226 | 194 | 92 | 34 | 12 | 9 | 45 | 96.3 |
| United States (Continental)..... | 2,973,776 | 41.3 | 122,775 | 105,711 | 48,830 | 28.4 | 24.47 | 4.3 | 11,775 | 67,110.7 |

¹ Federal District, created in 1791.

² Includes crops fed to animals.

STATISTICAL APPENDIX

A-7

VI. AVERAGE COMPOSITION OF NUTS AND OTHER FOODS

| Kind of Food | Refuse, Per Cent | Water, Per Cent | Protein, Per Cent | Fat, Per Cent | Sugar, Starch, Per Cent | Crude Fiber, Per Cent | Ash, Per Cent | Fuel Value per Pound, Calories |
|------------------------------|---------------------|--------------------|----------------------|------------------|-------------------------------|-----------------------------|------------------|--|
| Meat, Round Steak..... | ..... | 65.5 | 19.8 | 13.6 | ..... | ..... | 1.1 | 950 |
| Cheese, Cheddar..... | ..... | 27.4 | 27.7 | 36.8 | 4.1 | ..... | 4.0 | 2,145 |
| Eggs, boiled..... | 11.20 | 65.0 | 12.4 | 10.7 | ..... | ..... | 0.7 | 680 |
| Beans, dried..... | ..... | 12.6 | 22.5 | 1.8 | 35.2 | 4.4 | 3.5 | 1,605 |
| Soy beans..... | ..... | 10.8 | 34.0 | 16.8 | 33.7 | ..... | 4.7 | 1,970 |
| Wheat flour, high grade..... | ..... | 12.0 | 11.4 | 1.0 | 74.8 | 0.3 | 0.5 | 1,650 |
| Cornmeal, unbolled..... | 10.9 | 10.3 | 7.5 | 4.2 | 65.9 | ..... | 1.2 | 1,545 |
| Oatmeal, boiled..... | ..... | 84.5 | 2.8 | 0.5 | 11.5 | ..... | 0.7 | 285 |
| Rice..... | ..... | 12.3 | 8.0 | 0.3 | 78.8 | 0.2 | 0.4 | 1,630 |
| Potatoes..... | 20.00 | 78.3 | 2.2 | 0.1 | 18.0 | 0.4 | 1.0 | 385 |
| Sweet potatoes..... | 20.00 | 69.0 | 1.8 | 0.7 | 26.1 | 1.3 | 1.1 | 570 |
| Apples..... | 25.00 | 84.6 | 0.4 | 0.5 | 13.0 | 1.2 | 0.3 | 290 |
| Raisins..... | 10.00 | 14.6 | 2.6 | 3.3 | 73.6 | 2.5 | 3.4 | 1,605 |
| Grapes..... | 22.00 | 81.9 | 1.4 | 1.4 | 14.4 | 0.5 | 0.4 | 355 |
| Oranges..... | 28.00 | 87.2 | 0.9 | 0.2 | 10.6 | 0.6 | 0.4 | 230 |
| Persimmons, native..... | 18.00 | 64.4 | 0.8 | 0.4 | 32.0 | 1.5 | 0.9 | 640 |
| Dates..... | 10.00 | 15.4 | 2.1 | 2.8 | 78.4 | ..... | 1.3 | 1,615 |
| Olives, ripe..... | 19.00 | 64.7 | 1.7 | 25.9 | 4.3 | ..... | 3.4 | 1,205 |
| Cabbage..... | 15.00 | 77.7 | 1.4 | 0.2 | 4.8 | ..... | 0.9 | 125 |
| Figs, dried..... | ..... | 18.8 | 4.3 | 0.3 | 74.2 | ..... | 2.4 | 1,475 |
| Avocado..... | 25.00 | 65.4 | 1.7 | 26.4 | 3.3 | 1.8 | 1.4 | 1,200 |
| *"Biotes"..... | 35.6 | 2.6 | 5.2 | 24.1 | 30.9 | ..... | 1.6 | 1,690 |
| Brazil nut..... | 49.35 | 4.7 | 17.4 | 65.0 | 5.7 | 3.9 | 3.3 | 3,120 |
| Chestnut, dry..... | 23.40 | 6.1 | 10.7 | 7.8 | 70.1 | 2.9 | 2.4 | 1,840 |
| Coconut..... | 34.66 | 13.0 | 6.6 | 56.2 | 13.7 | 8.9 | 1.6 | 2,805 |
| Pecan..... | 50.10 | 3.4 | 12.1 | 70.7 | 8.5 | 3.7 | 1.6 | 3,300 |
| Walnut (Persian)..... | 58.80 | 3.4 | 18.2 | 60.7 | 13.7 | 2.3 | 1.7 | 3,075 |
| Peanut butter..... | ..... | 2.1 | 29.3 | 46.5 | 17.1 | ..... | 5.0 | 2,825 |
| Chestnut flour..... | ..... | 7.8 | 4.6 | 3.4 | 80.8 | ..... | 3.4 | 1,780 |

* Acorns (*Quercus emori*) as sold and used by Indians of northern Mexico and southern Arizona.

VII. WORLD PRODUCTION OF GOLD BY DECADES

(Million fine ounces)

| Country | 1851 to 1860 | 1871 to 1880 | 1891 to 1900 | 1901 to 1910 | 1921 to 1930 |
|----------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| United States..... | Quantity.. 27 | 19 | 25 | 42 | 23 |
| | Percentage.. 41 | 34 | 24 | 23 | 12 |
| Australia..... | Quantity.. 24 | 15 | 22 | 33 | .. |
| | Percentage.. 38 | 26 | 21 | 18 | .. |
| U. S. S. R. (Russia)..... | Quantity.. 8 | 12 | 12 | 13 | 8 |
| | Percentage.. 13 | 22 | 12 | 7 | 4 |
| Colombia..... | Quantity.. 1 | 1 | .. | .. | .. |
| | Percentage.. 2 | 3 | .. | .. | .. |
| Brazil..... | Quantity.. 1 | .. | .. | .. | .. |
| | Percentage.. 1 | .. | .. | .. | .. |
| New Zealand..... | Quantity.. .. | 4 | .. | .. | .. |
| | Percentage.. .. | 7 | .. | .. | .. |
| Canada..... | Quantity.. .. | .. | 4 | 7 | 16 |
| | Percentage.. .. | .. | 4 | 4 | 9 |
| Union of South Africa..... | Quantity.. .. | .. | 19 | 48 | 95 |
| | Percentage.. .. | .. | 19 | 26 | 51 |
| Mexico..... | Quantity.. .. | .. | .. | .. | 7 |
| | Percentage.. .. | .. | .. | .. | 4 |
| World..... | Quantity.. 65 | 57 | 102 | 184 | 186 |
| | Percentage.. .. | .. | .. | .. | .. |

VIII. PRODUCTION OF ZINC—(Tons)

| State | 1900 | 1928 | 1931 |
|----------------------------|---------|---------|---------|
| New Jersey..... | ..... | 99,871 | 94,285 |
| Oklahoma..... | ..... | 180,252 | 78,132 |
| Kansas..... | 62,136 | 107,251 | 39,051 |
| United States (total)..... | 123,886 | 695,170 | 410,318 |

IX. SILVER PRODUCTION BY COUNTRIES (Million fine ounces)

| Country | 1900 | 1928 | 1931 |
|--------------------|------|------|------|
| United States..... | 58 | 58 | 32 |
| Mexico..... | 57 | 109 | 86 |
| Australia..... | 13 | .. | 10 |
| Bolivia..... | 11 | .. | .. |
| Peru..... | 7 | 22 | 9 |
| Canada..... | .. | 22 | 21 |
| India..... | .. | 7 | .. |
| World..... | 174 | 258 | 196 |

X. WORLD PRODUCTION OF CRUDE PETROLEUM

(Millions of barrels of 42 United States gallons)

| Country | 1910 | 1920 | 1932 |
|---------------------------|------|------|-------|
| United States..... | 210 | 443 | 782 |
| U. S. S. R. (Russia)..... | 70 | 25 | 155 |
| Venezuela..... | .. | .. | 116 |
| Rumania..... | 10 | 7 | 54 |
| Persia..... | .. | 12 | 49 |
| Netherlands India..... | 11 | 18 | 39 |
| Mexico..... | 4 | 157 | 33 |
| World total..... | 328 | 689 | 1,306 |

XI. PRODUCTION OF LEAD—(Tons)

| State | 1901 | 1928 | 1931 |
|----------------------------|---------|---------|---------|
| Missouri..... | ..... | 195,393 | 160,121 |
| Idaho..... | 79,654 | 145,323 | 99,365 |
| Utah..... | 49,870 | 145,915 | 79,212 |
| Colorado..... | 73,265 | 26,751 | 6,884 |
| United States (total)..... | 284,797 | 627,153 | 404,622 |

XII. SOME IMPORTANT STATISTICS CONCERNING THE OCCUPATIONS OF PEOPLES IN OF THE

| Country | Distribution of Persons in Gainful Occupations. Given in Percentage of Total Employed. Latest Available Data | | | | Bushels of Grain Produced per Capita, 1931 | Yield of Wheat, Bushels per Acre, Latest 3-Year Average Available | Cattle per Capita, 1932, or Latest Available | Hogs, Sheep, and Goats per Capita, 1931, or Latest Available | Tons (metric) of Coal and Lignite Mined per Capita, 1932 | Developed Water Power in Thousands of Horse Power, 1931 | Available Water Power in Thousands of Horse Power, 1931 |
|------------------------------------|--|---|------------------------|--------------------------|--|---|--|--|--|---|---|
| | Agriculture, Forestry, and Fisheries | Manufacturing and Mechanical Industries | Extraction of Minerals | Trade and Transportation | | | | | | | |
| EUROPE: | | | | | | | | | | | |
| Austria..... | 31.9 | 33.3 | 12.2 | 10 | 25.3 | 0.3 | 0.4 | 0.5 | 700 | 1,660 | |
| Belgium..... | 19.1 | 39.9 | 6.6 | 18.3 | 11 | 37.8 | 0.2 | 0.2 | 2.6 | ... | ... |
| Bulgaria..... | 81.0 | 8.9 | 0.3 | 5.4 | 23 | 18.9 | 0.4 | 1.8 | 0.2 | 50 | 1,200 |
| Czechoslovakia..... | 40.3 | 34.1 | 2.7 | 10.0 | 16 | 26.1 | 0.3 | 0.3 | 2.0 | 155 | 1,000 |
| Denmark..... | 34.8 | 27.0 | ... | 16.7 | 36 | 42.5 | 0.9 | 1.6 | ... | 11 | 20 |
| Estonia..... | ... | ... | ... | ... | 22 | 16.3 | 0.6 | 0.7 | ... | 19 | 125 |
| Finland..... | 63.4 | 14.4 | ... | 7.4 | 18 | 24.5 | 0.5 | 0.4 | ... | 250 | 1,800 |
| France..... | 38.3 | 31.2 | 2.0 | 11.4 | 17 | 23.6 | 0.4 | 0.4 | 1.1 | 2,300 | 5,400 |
| Germany..... | 30.5 | 38.1 | 3.2 | 16.4 | 15 | 32.5 | 0.3 | 0.5 | 3.5 | 2,000 | 2,000 |
| G. Britain and N. Ireland..... | 6.8 | 39.7 | 7.5 | 20.9 | 5 | 32.8 | 0.2 | 0.7 | 4.6 | 400 | 850 |
| Greece..... | ... | ... | ... | ... | 5 | 12.6 | 0.1 | 1.9 | ... | 8 | 250 |
| Hungary..... | 58.2 | 18.6 | 1.1 | 8.2 | 22 | 19.3 | 0.2 | 0.5 | 0.5 | 3 | 175 |
| Irish Free State..... | ... | ... | ... | ... | 14 | 39.1 | 1.4 | 1.7 | ... | ... | ... |
| Italy..... | 56.1 | 24.0 | 0.6 | 10.4 | 10 | 22.3 | 0.2 | 0.4 | ... | 4,840 | 3,800 |
| Latvia..... | ... | ... | ... | ... | 22 | 19.5 | 0.6 | 0.9 | ... | ... | ... |
| Lithuania..... | ... | ... | ... | ... | 26 | 17.8 | 0.5 | 1.1 | ... | ... | ... |
| Netherlands..... | 23.6 | 36.1 | 1.7 | 21.3 | 5 | 41.1 | 0.3 | 0.3 | 1.6 | 1 | 17 |
| Norway..... | 35.3 | 26.5 | ... | 21.8 | 5 | 24.9 | 0.5 | 0.8 | ... | 1,900 | 9,500 |
| Poland..... | 75.9 | 8.7 | 0.7 | 5.6 | 17 | 15.5 | 0.3 | 0.3 | 0.9 | 90 | 1,400 |
| Portugal..... | 57.5 | 21.5 | 0.4 | 9.1 | 7 | 11.6 | 0.1 | 1.0 | 0.03 | 48 | 300 |
| Rumania..... | 79.5 | 7.8 | 0.2 | 4.5 | 28 | 13.0 | 0.3 | 0.9 | 0.1 | 109 | 1,600 |
| Spain..... | ... | ... | ... | ... | 14 | 13.4 | 0.2 | 1.3 | 0.3 | 1,000 | 4,000 |
| Sweden..... | 40.7 | 30.2 | 0.8 | 14.3 | 22 | 31.8 | 0.5 | 0.4 | 0.06 | 1,675 | 5,000 |
| Switzerland..... | 25.9 | 44.1 | 0.3 | 16.6 | 2 | 31.2 | 0.4 | 0.3 | 0.001 | 2,300 | 2,500 |
| Turkey (Europe and Asia)..... | ... | ... | ... | ... | 17 | 10.9 | 0.4 | 1.6 | 0.08 | ... | ... |
| U. S. S. R. (Europe and Asia)..... | 86.7 | 6.1 | ... | 3.0 | 22 | 9.9 | 0.3 | 0.7 | 0.3 | 446 | 16,425 |
| Yugoslavia..... | ... | ... | ... | ... | 19 | 16.1 | 0.3 | 1.0 | 0.4 | 212 | 3,000 |
| OTHER COUNTRIES: | | | | | | | | | | | |
| Argentina..... | 16.8 | 26.6 | ... | 12.8 | 51 | 13.3 | 2.8 | 4.6 | ... | 35 | 5,000 |
| Australia..... | 22.9 | 31.2 | 2.9 | 24.3 | 26 | 12.8 | 1.9 | 17.1 | 1.0 | 2 | 6,000 |
| Canada..... | 35.0 | 26.9 | 1.6 | 20.8 | 78 | 13.0 | 0.8 | 0.8 | 1.1 | 6,125 | 18,000 |
| Egypt..... | 69.2 | 8.4 | ... | 7.4 | 10 | 28.5 | 0.1 | 0.1 | ... | ... | 600 |
| India..... | 72.3 | 11.2 | 0.3 | 7.3 | 8 | 10.5 | 0.6 | 0.3 | 0.05 | 300 | 27,000 |
| Japan..... | ... | ... | ... | ... | 9 | 25.3 | 0.02 | 0.01 | 0.4 | 3,500 | 6,000 |
| Mexico..... | ... | ... | ... | ... | 6 | 9.8 | 0.2 | 0.6 | 0.06 | 494 | 6,000 |
| United States..... | 21.9 | 28.9 | 2.0 | 20.4 | 39 | 13.5 | 0.5 | 0.9 | 2.6 | 14,885 | 38,000 |

XIII. PRODUCTION OF ALUMINUM BY COUNTRIES
(Thousand metric tons)

| Country | 1912 | 1925 | 1930 |
|----------------------|------|------|------|
| United States..... | 20 | 64 | 104 |
| Canada..... | 8 | 14 | 35 |
| France..... | 13 | 18 | 29 |
| Switzerland..... | ... | 21 | 21 |
| Germany..... | 12 | 27 | 30 |
| Austria-Hungary..... | ... | ... | ... |
| United Kingdom..... | 8 | 10 | 14 |
| Norway..... | 2 | 21 | 27 |
| Austria..... | ... | 3 | 4 |
| Italy..... | ... | 2 | 8 |
| World (total)..... | 63 | 180 | 272 |

XIV. COPPER PRODUCED
(Thousand tons)

| State | 1880 | 1900 | 1920 | 1929 | 1931 |
|----------------------------|------|------|------|------|------|
| Alaska..... | ... | ... | 33 | 20 | 12 |
| Arizona..... | 1 | 59 | 276 | 415 | 200 |
| California..... | 1 | 14 | 6 | 17 | 4 |
| Michigan..... | 25 | 73 | 77 | 93 | 53 |
| Montana..... | 1 | 135 | 89 | 150 | 87 |
| Nevada..... | ... | ... | 28 | 69 | 36 |
| New Mexico..... | ... | 2 | 26 | 50 | 33 |
| Utah..... | ... | 9 | 55 | 163 | 81 |
| United States (total)..... | 30 | 303 | 605 | 1026 | 525 |

PRINCIPAL EUROPEAN COUNTRIES AND COUNTRIES REPRESENTATIVE OF OTHER PARTS WORLD

| | Value of Manufactures per Capita (dollars), Latest Available Data | Number of Persons per Cotton Spindle, 1862 | Number of Persons per Telephone Instrument, 1930 | Number of Persons per Automobile, 1933 | Railway Mileage, 1930 | Freight, Ton Miles per Capita, 1930 | Merchant Marine (thous. of gross tons), 1933-34 | Imports from United States (thousand dollars), 1932 (Foreign Countries Figures) | Exports to United States (thousand dollars), 1932 (Foreign Countries Figures) | Number of Persons in All Schools per 100 Population, Latest Available Years | Country |
|-------|---|--|--|--|-----------------------|-------------------------------------|---|---|---|---|-------------------------------|
| ..... | 8.8 | 29 | 195 | 4,157 | 351 | ..... | 7,908 | 2,119 | 13 | ..... | EUROPE |
| ..... | 3.8 | 26 | 45 | 2,997 | 461 | 456 | 39,543 | 19,878 | 15 | ..... | Austria |
| ..... | 333 | 2,009 | 1,825 | 92 | ..... | 464 | 192 | 14 | ..... | ..... | Belgium |
| ..... | 4.1 | 105 | 150 | 6,880 | ..... | 31,872 | 14,978 | 14 | ..... | ..... | Bulgaria |
| ..... | ..... | 10 | 30 | 3,291 | ..... | 1,168 | 16,479 | 1,071 | 15 | ..... | Czechoslovakia |
| ..... | ..... | 70 | 365 | 1,180 | 153 | 126 | 992 | 413 | 11 | ..... | Denmark |
| 41 | ..... | 29 | 120 | 3,196 | 270 | 421 | 4,166 | 6,882 | 11 | ..... | Estonia |
| 108 | 4.1 | 36 | 23 | 39,725 | 707 | 3,512 | 114,403 | 37,530 | 12 | ..... | Finland |
| ..... | 6.3 | 20 | 105 | 33,466 | 495 | 3,901 | 140,968 | 66,982 | 16 | ..... | France |
| 333 | 0.9 | 23 | 28 | 20,403 | 393 | 18,701 | 293,772 | 53,318 | 17 | ..... | Germany |
| 11 | ..... | 435 | 413 | 1,557 | 12 | 1,417 | 9,041 | 4,028 | 12 | ..... | G. Britain and N. Ireland |
| 41 | ..... | 81 | 543 | 5,390 | ..... | ..... | 2,471 | 465 | 14 | ..... | Greece |
| 40 | ..... | 96 | 60 | 3,027 | ..... | ..... | 4,629 | 362 | 18 | ..... | Hungary |
| ..... | 7.8 | 109 | 129 | 13,653 | 186 | 3,150 | 57,006 | 32,717 | 12 | ..... | Irish Free State |
| 45 | ..... | 39 | 593 | 1,712 | 131 | 198 | 611 | 166 | 12 | ..... | Italy |
| 8 | ..... | 163 | 1,022 | 1,056 | 80 | ..... | 635 | 104 | 11 | ..... | Latvia |
| 52 | ..... | 24 | 61 | 2,285 | ..... | 2,765 | 34,459 | 11,761 | 16 | ..... | Lithuania |
| ..... | ..... | 15 | 54 | 2,407 | 121 | 4,080 | 16,548 | 8,341 | 15 | ..... | Netherlands |
| ..... | 18.9 | 156 | 1,273 | 12,179 | 396 | 67 | 11,663 | 1,126 | 13 | ..... | Norway |
| ..... | ..... | 181 | 134 | 2,128 | ..... | 266 | 8,526 | 1,595 | 6 | ..... | Poland |
| ..... | 11 | 322 | 610 | 6,917 | 117 | 93 | 3,481 | 204 | 12 | ..... | Portugal |
| ..... | 11.0 | 107 | 149 | 9,671 | ..... | 1,232 | 31,095 | 10,089 | 12 | ..... | Rumania |
| 178 | ..... | 12 | 42 | 10,445 | 430 | 1,675 | 44,977 | 33,573 | 13 | ..... | Spain |
| ..... | 3.1 | 14 | 44 | 3,354 | 337 | ..... | 22,183 | 10,628 | 14 | ..... | Sweden |
| ..... | ..... | 641 | 3,133 | 3,305 | ..... | 188 | 1,072 | 5,719 | 3 | ..... | Switzerland |
| ..... | 18.0 | 426 | 2,915 | 50,269 | 577 | 843 | 16,307 | 8,762 | 12 | ..... | Turkey (Europe and Asia) |
| ..... | ..... | 196 | 1,211 | 6,296 | 108 | 374 | 2,076 | 476 | 10 | ..... | U. S. S. R. (Europe and Asia) |
| ..... | ..... | 38 | 38 | 24,805 | ..... | 342 | 32,532 | 25,853 | 12 | ..... | Yugoslavia |
| 133 | ..... | 12 | 12 | 27,477 | 558 | 642 | 27,378 | 5,960 | 20 | ..... | OTHER COUNTRIES |
| 260 | 8.4 | 7 | 9 | 42,075 | 2,703 | 1,416 | 232,262 | 149,698 | 25 | ..... | Argentina |
| ..... | ..... | 338 | 485 | 2,072 | ..... | 48 | 3,137 | 4,793 | 4 | ..... | Australia |
| ..... | 37.9 | 6,082 | 2,908 | 42,281 | 59 | 200 | 27,502 | 26,741 | 4 | ..... | Canada |
| 38 | 8.5 | 80 | 650 | 13,420 | 111 | 4,258 | 143,326 | 125,131 | 16 | ..... | Egypt |
| 26 | 19.9 | 180 | 191 | 14,439 | 115 | 42 | 36,768 | 63,405 | 10 | ..... | India |
| 331 | 3.9 | 6 | 5 | 260,440 | 3,142 | 13,358 | ..... | ..... | 24 | ..... | Japan |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | Mexico |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | United States |

XV. PRODUCTION AND YIELD OF CORN
(Production in million bushels; yield in bushels per acre)

| State or Country | 1920 | 1925 | 1931 |
|------------------|------------|------|-----------|
| Connecticut..... | 3 | 3 | 2 |
| ..... | Yield..... | 40.0 | 50.0 42.0 |
| New York..... | 31 | 25 | 22 |
| ..... | Yield..... | 40.0 | 36.0 39.0 |
| Illinois..... | 314 | 395 | 340 |
| ..... | Yield..... | 34.6 | 42.0 37.0 |
| Kansas..... | 133 | 110 | 115 |
| ..... | Yield..... | 26.5 | 16.6 17.5 |
| Georgia..... | 66 | 42 | 37 |
| ..... | Yield..... | 15.0 | 10.7 10.0 |
| Argentina..... | 259 | 280 | 285 |
| ..... | Yield..... | 31.6 | 26.3 29.9 |
| Rumania..... | 182 | 164 | 239 |
| ..... | Yield..... | 24.4 | 16.9 20.3 |

XVI. PULP-WOOD PRODUCTION AND CONSUMPTION IN UNITED STATES

| State | Production (1,000 tons) | Consumption (1,000 cords) |
|----------------------------|-------------------------|---------------------------|
| Maine..... | 981 | 1,312 |
| Wisconsin..... | 734 | 1,234 |
| New York..... | 663 | 826 |
| Washington..... | 524 | 956 |
| Louisiana..... | 246 | 460 |
| Pennsylvania..... | 213 | 398 |
| Virginia..... | 206 | 375 |
| New Hampshire..... | 213 | 376 |
| Minnesota..... | 190 | 266 |
| Michigan..... | 178 | 313 |
| Other states..... | 715 | 1,129 |
| United States (total)..... | 4,863 | 7,645 |

XVII. WHEAT PRODUCTION (1,000 bushels)

| | |
|---------------|---------|
| U. S. S. R. | 881,473 |
| United States | 650,745 |
| Canada | 355,395 |
| India | 344,886 |
| France | 336,095 |
| Italy | 287,278 |
| Argentina | 245,777 |
| Germany | 194,875 |
| Australia | 186,199 |
| Spain | 158,072 |

XVIII. WHEAT EXPORTS (1,000 bushels)

| | |
|---------------|---------|
| Canada | 233,453 |
| Australia | 151,756 |
| Argentina | 132,596 |
| United States | 88,504 |
| U. S. S. R. | 45,506 |

XIX. WHEAT IMPORTS (1,000 bushels)

| | |
|----------------|---------|
| United Kingdom | 242,237 |
| France | 70,184 |
| China | 59,707 |
| Belgium | 50,707 |
| Germany | 34,170 |

XX. CORN PRODUCTION (1,000 bushels)

| | |
|---------------|-----------|
| United States | 1,618,550 |
| Argentina | 281,547 |
| Rumania | 210,481 |
| Yugoslavia | 166,301 |
| U. S. S. R. | 161,999 |
| Italy | 110,300 |

XXI. CORN EXPORTS (1,000 bushels)

| | |
|-----------------------|---------|
| Argentina | 296,876 |
| Rumania | 61,141 |
| Union of South Africa | 13,892 |
| Yugoslavia | 9,918 |
| U. S. S. R. | 9,283 |

XXII. CORN IMPORTS (1,000 bushels)

| | |
|------------------|---------|
| United Kingdom | 112,496 |
| Netherlands | 64,429 |
| France | 43,469 |
| Denmark | 34,492 |
| Belgium | 33,758 |
| Germany | 23,733 |
| Irish Free State | 22,244 |
| Italy | 22,234 |

XXIII. RICE PRODUCTION (1,000,000 pounds)

| | |
|--------------------|--------|
| India | 71,280 |
| Japan | 18,159 |
| Java and Madura | 7,960 |
| French Indo-China | 7,878 |
| Siam | 6,300 |
| Chosen | 5,027 |
| Philippine Islands | 2,942 |
| Taiwan | 2,586 |
| United States | 1,184 |
| Madagascar | 975 |
| Italy | 898 |
| Ceylon | 586 |
| Egypt | 424 |
| Spain | 398 |

XXIV. RICE EXPORTS (1,000,000 pounds)

| | |
|-------------------|-------|
| India | 4,783 |
| Siam | 3,335 |
| French Indo-China | 2,209 |
| British Malaya | 419 |
| Italy | 335 |
| United States | 266 |
| Netherlands | 224 |
| Japan | 197 |
| Spain | 85 |
| Egypt | 77 |

XXV. RICE IMPORTS (1,000,000 pounds)

| | |
|------------------|-------|
| China | 2,187 |
| British Malaya | 1,696 |
| Netherland India | 1,364 |
| Germany | 874 |
| Ceylon | 821 |
| France | 724 |
| Cuba | 391 |
| Japan | 307 |
| United Kingdom | 261 |
| Netherlands | 257 |
| Mauritius | 133 |
| Belgium | 128 |
| India | 116 |
| Czechoslovakia | 112 |
| Argentina | 95 |
| U. S. S. R. | 93 |

XXVI. SUGAR PRODUCTION (short tons)

| | |
|--------------------|-----------|
| India | 5,222,500 |
| Cuba | 2,413,901 |
| United States | 1,817,380 |
| Philippine Islands | 1,425,391 |
| Germany | 1,348,465 |
| France | 1,060,500 |
| Brazil | 1,100,000 |
| Java | 1,040,672 |
| Hawaii | 1,032,404 |
| U. S. S. R. | 965,000 |
| Puerto Rico | 907,714 |

XXVII. SUGAR IMPORTS (short tons)

| | |
|----------------|-----------|
| United States | 3,073,765 |
| United Kingdom | 2,358,103 |
| British India | 583,667 |
| China | 553,176 |
| Canada | 454,972 |
| France | 412,187 |

XXVIII. BEEF AND VEAL PRODUCTION

(1,000,000 pounds)

| | |
|-------------------------------------|-------|
| United States | 6,951 |
| Argentina | 3,351 |
| Germany | 2,385 |
| Brazil | 2,116 |
| France | 2,079 |
| United Kingdom and Irish Free State | 1,556 |
| Australia | 763 |
| Canada | 599 |
| Poland | 571 |
| Uruguay | 409 |
| New Zealand | 303 |

XXIX. PORK AND LARD PRODUCTION

(1,000,000 pounds)

| | |
|---|--------|
| United States | 11,468 |
| Germany | 4,513 |
| U. S. S. R. | 2,331 |
| France | 1,615 |
| Poland | 1,160 |
| Denmark | 1,007 |
| United Kingdom and Irish Free State | 972 |
| Canada | 915 |

XXX. MUTTON AND LAMB PRODUCTION

(1,000,000 pounds)

| | |
|----------------------|-----|
| United States | 685 |
| United Kingdom | 621 |
| Australia | 487 |
| Argentina | 446 |
| New Zealand | 407 |

XXXI. BUTTER PRODUCTION (1,000 pounds)

| | |
|-------------------|---------|
| Denmark | 363,153 |
| New Zealand | 233,750 |
| Australia | 158,806 |
| U. S. S. R. | 68,110 |
| Netherlands | 58,794 |
| Argentina | 53,541 |

XXXII. CHEESE PRODUCTION (1,000 pounds)

| | |
|-------------------|---------|
| New Zealand | 191,900 |
| Netherlands | 180,258 |
| Canada | 85,864 |
| Italy | 77,721 |
| Switzerland | 49,003 |

XXXIII. EXPORTS OF BEEF PRODUCTS

(1,000 pounds)

| | |
|---------------------|-----------|
| Argentina | 1,084,905 |
| Australia | 231,278 |
| Uruguay | 199,962 |
| Brazil | 118,412 |
| New Zealand | 110,918 |
| United States | 65,417 |
| Denmark | 46,604 |

XXXIV. EXPORTS OF HOG PRODUCTS

(1,000 pounds)

| | |
|------------------------|---------|
| Denmark | 908,725 |
| United States | 710,151 |
| Netherlands | 267,708 |
| Poland | 149,501 |
| Sweden | 54,079 |
| Irish Free State | 34,928 |
| Canada | 32,114 |

XXXV. EXPORTS OF MUTTON AND LAMB

(1,000 pounds)

| | |
|-------------------|---------|
| New Zealand | 409,577 |
| Argentina | 169,300 |
| Australia | 137,267 |

XXXVI. IMPORTS OF BEEF PRODUCTS

(1,000 pounds)

| | |
|----------------------|-----------|
| United Kingdom | 1,552,192 |
| France | 82,098 |
| Germany | 70,689 |
| Belgium | 67,271 |
| Japan | 61,165 |
| Cuba | 28,195 |
| Spain | 22,026 |

XXXVII. IMPORTS OF HOG PRODUCTS

(1,000 pounds)

| | |
|----------------------|-----------|
| United Kingdom | 1,696,217 |
| Germany | 289,185 |
| Cuba | 82,666 |
| Mexico | 62,499 |
| Czechoslovakia | 54,364 |
| France | 50,496 |
| Belgium | 41,365 |
| Austria | 30,413 |

XXXVIII. IMPORTS OF MUTTON AND LAMB (1,000 pounds)

| | |
|----------------------|---------|
| United Kingdom | 805,451 |
| France | 29,097 |

XXXIX. MAKING MODELS OF VILLAGES, FARMS, DWELLINGS, ETC.

Use a table top, large tray or lid of pasteboard box for a foundation.

For *hills* and *mountains*, use clay or damp sand; stones are useful when piled up and covered with earth.

Make *trees* of branches of real trees, flower stalks, and crepe paper.

For *lakes* and *streams*, and other forms of water, use blue paper, water in a pan, pieces of a mirror, or window glass.

Roads, paths, use real dirt or sand, or brownish paper cut in the desired shape.

Snow can be made of cotton, and *grass* can be made of real sod, or of green paper; the paper cut into tiny shreds and sprinkled over sand.

For *houses* and other *buildings* the following materials will be useful: plasteline or clay; corrugated paper (it comes as a wrapping for books and parcels); bark; stone; cardboard or compoboard painted to be like brick; cardboard for shingle roof; hay or straw for a thatched roof.

For *people* and *animals*, use small dolls and toys; clothespins; or wire. Use wire and cotton and crepe paper to complete the figures. Or you may cut the figures from cardboard and paint them.

Figures may be made to stand if they are cut double, or they may be glued to pieces of wood.

Excellent models of continents or other land areas can be made of salt and flour.

For other suggestions about handwork consult any good activities handbook, one of which is *Industrial Arts for Elementary Schools*, by Bonser and Mossman.

It might be stimulating to get the pupils to devise new ways of reproducing models of the things about which they study. I once saw in a Philippine schoolroom a six-foot table on which the class was building a village and environs. As they studied home geography, they built, and it was a beautiful thing. I saw it at recess time, and the children were at work on it. It stood in a corner of the room and stayed there for weeks.

Such a table might show industry after industry, country after country, or type after type as the class advances.

XL. USEFUL BOOKS

FOR THE TEACHER DESIRING MORE MATERIAL

1. Climatic Regions. JONES, W., AND WHITTLESEY, D., *An Introduction to Economic Geography*; University of Chicago Press.
2. World Industries. SMITH, J. RUSSELL, *Industrial and Commercial Geography*; Henry Holt & Co., N. Y.
3. The Problems of the Nations. BOWMAN, I., *The New World*; World Book Co., Yonkers, N. Y.
4. North America. SMITH, J. RUSSELL, *North America*; Harcourt, Brace, N. Y.
5. South America. JONES, C. F., *South America*; Henry Holt & Co., N. Y.
6. Europe. BLANCHARD, W. O., AND VISHNER, S. S., *Economic Geography of Europe*; McGraw-Hill, N. Y.
7. Asia. STAMP, DUDLEY, *Asia*; Dutton, N. Y.
8. Africa. SUGGATE, L. S., *Africa*; Harrap, London.
9. Australia. TAYLOR, G., *Australia*; Oxford University Press, N. Y.

FOR THE STUDENT

(a) Industries, Occupations, and Activities of Man.

Dozens of Industries, each having two to five pages.
RUSH, C. E., AND WINSLOW, A., *Modern Aladdins and Their Magic. The Science of Things About Us*, 318 pp.; Little, Brown & Co., Boston.

This book covers so much ground that it is the most important single book for student reference.

CRUMP, IRVING, *The Boy's Book of Forest Rangers*, 253 pp. Dodd, Mead & Co., N. Y.

SMITH, J. RUSSELL, *The Story of Iron and Steel*, 193 pp.; D. Appleton, N. Y.

WATSON, E., *The Story of Textiles*, 83 pp.; Harper & Bro., N. Y.

BASSETT, S. W., *The Story of Wool*; Penn Publishing Co., Philadelphia.

BASSETT, S. W., *The Story of Silk*; Penn Publishing Co., Philadelphia.

CHAMBERLAIN, J. F., *How We Are Clothed*; Macmillan Co., N. Y.

KIPLING, RUDYARD. Fishing: *Captains Courageous*; Doubleday, Doran, N. Y.

HULBERT, W. D., *Forest Neighbors*; Row, Peterson & Co., N. Y.

SAMUEL, E. I., *The Story of Gold and Silver*; Penn Publishing Co., Philadelphia.

HULBERT, A. B., *Forty-Niners*, 340 pp.; Little, Brown & Co., Boston.

VAN METRE, T. W., *Trains, Tracks, and Travel*, 236 pp.; Simmons, Boardman, N. Y.

VAN METRE, T. W., *Ships: Tramps and Liners*, 324 pp.; Doubleday, Doran, N. Y.

MOONEY, JAMES E., *Air Travel*, a brief history of flying, 311 pp.; Charles Scribner's Sons, N. Y.

Any Topic:

WINSTON'S CUMULATIVE LOOSE-LEAF ENCYCLOPEDIA, John C. Winston Company, Philadelphia.

COMPTON'S PICTURED ENCYCLOPEDIA (Vol. VII, pp. 2749-55) (on coal and other fuels), F. E. Compton & Co., Chicago.

THE BOOK OF KNOWLEDGE (Vol. XIII, pp. 4533-52) (on coal and other fuels), Grolier Society, N. Y.

(b) Books of Travel and Exploration That Give Feeling for Geographic Backgrounds

Great Northern Forest, Canada; Fur Trapping, Caribou Hunting, Sled Dog, Pack Dog:

INGSTAD, H., *The Land of Feast and Famine*, 322 pp.; Knopf, N. Y.

O'BRIEN, JACK, *Silver Chief, Dog of the North*, 224 pp.; John C. Winston Company, Philadelphia.

Himalaya Mountains, Turkestan, Nomad Shepherds, Yaks, Oases, Bazaars, Hunting:

ROOSEVELT, T. AND K., *East of the Sun and West of the Moon*, 284 pp.; Scribners, N. Y.

Nomads of the High Pastures of Central Asia:

The Road to the Grey Pamir, 289 pp.; Little, Brown, Boston.

Africa: Tropic Grasslands, Lions, Forests, Pygmies: HOEFLE, P., *Africa Speaks*, 469 pp.; John C. Winston Company, Philadelphia.

Africa: Grassland and Mountain Forest:

AKELEY, CARL AND MARY, *Lions and Gorillas and Their Neighbors*, 260 pp.; Dodd, Mead & Co., N. Y.

China:

LEWIS, ELIZABETH FOREMAN, *Young Fu of the Upper Yangtze*, 272 pp.; The John C. Winston Company, Philadelphia.

Equatorial Forest—the Terrible Ants:

BEEBE, W., *Edge of the Jungle* (Chs. 7, 8), 303 pp.; Henry Holt, N. Y.

Argentine Pampa, Andean Plateau, Tropic Lowland Forest:

TSCHIFFELY, A. F., *Tschiffely's Ride* (Horseback, Buenos Aires to Texas), 328 pp.; Simon & Schuster, N. Y.

Italy, Its Towns, Facts and Stories:

UNTERMAYER, L., *The Donkey of God*, 300 pp.; Harcourt, Brace, N. Y.

The South Sea Islands—Pearl Diving, Life of Boat People:

NORDHOFF, C., *The Pearl Lagoon*, 224 pp.; Little, Brown & Co., Boston.

PINCHOT, GIFFORD, JR., *Giff and Stiff in the South Seas*, 254 pp.; The John C. Winston Company, Philadelphia.

Tundra and Arctic Seashore:

STEFANSSON, V., *Hunters of the Great North*; Harcourt, Brace, N. Y.

MACMILLAN, D. B., *The Life of a North Greenland Boy, Kah-da*, 237 pp.; Doubleday, Doran, N. Y.

Whales and Antarctic Seas:

VILLIERS, A. J., *Whaling in the Frozen South*; 302 pp.; Robert M. McBride & Co., N. Y.

MELVILLE, HERMAN, *Moby Dick, the White Whale*, 432 pp.; The John C. Winston Company, Philadelphia.

Persia, Rugs, Nomads, Village Life:

MIRZA, Y. B., *Myself When Young*, 260 pp.; Doubleday, Doran, N. Y.

Brazil—Exploration in Tropic Grassland and Equatorial Forest:

FLEMING, PETER, *Brazilian Adventure*, 444 pp.; Charles Scribner's Sons, N. Y.

The Colorado Plateau and the Terrible Power of Water:

EDDY, CLYDE, *Down the World's Most Dangerous River*, 293 pp.; F. A. Stokes, N. Y.

INDEX

Explanation of Symbols: Geographic and proper names are indexed in black-face type (**Abo**), other subjects in light-face (*abaca*). Map references are given by italic figures in parentheses, with or without location, as (*278 R5*) or (*56*). Illustrations are shown by italic figures with asterisk, as **81*. All references are to page numbers.

Key to Pronunciation: *âte*, *senâte*, *râre*, *cât*, *local*, *fâr*, *âsk*, *pôrâde*; *scène*, *èvent*, *êdge*, *novêl*, *refer*; *right*, *sîn*; *côld*, *ôbey*, *côrd*, *stôp*, *cômpare*; *ûnit*, *ûnite*, *bûrn*, *cût*, *foctûs*, *menû*; *boôt*, *fôot*; *found*; *boil*; *fûnctiôn*; *chase*; *good*; *joy*; *then*, *thick*; *hw* = *wh* as in *when*; *zh* = *z* as in *azure*; *kh* = *ch* as in *loch*.

abaca, 276, 484, 486.
Abo (see *Turku*).
Abyssinia (*âb'î-sîn'îa*) (see *Ethiopia*).
Adana, 46.
Addis Ababa (*âd'îs â'bâ-bâ*), (278 R5), *298, 299.
Adelaide (*âd'ê-lâd*), (327 Q5), *344, 344, 349, 350, 351.
Aden (*â'dên*; *â'dên*), (14 T4), 13, 36.
Adriatic (*â'drê-ât'îk*) **Sea** (52 R3), 65, 66, 70, 167, 173, 175.
Ægean (*ê-jê-ân*) **Sea** (116 P6), 177.
Afghanistan (*âf-gân'îstân*), (3 Q3), (7), (214 P3), 11, 198, 250.
Africa (*âfrî-kâ*), (14-15), (278), (280-281), 13-31, 279-323; climate, (56), (94), (95); European conquest, 286, 293, 296, 298, 306, 311; future, 314, 319, 322; natural barriers, 286; navigable rivers, (286), 290; occupations, (211); population, (57); rainfall, (56); roads, *286; temperature, (94), (95); water power, 322.
 (Refer by name to particular countries.)
Agra (*â'grâ*), (214 Q4), *247.
Ahvenanmaa Islands (*Åland Islands*), 195.
Aix-les-Bains (*â-lâ-bân*), *140.
Åland (*ô-lân*; *ô-lân*) **Islands** (see *Ahvenanmaa Islands*).
Alaska (Plate I), fishing, 456; forests and lumbering, 474.
Albania (*âl-bân'îa*), (6), (92 R3), (116 P5); Dalmatian coast, 173, *174; mountains, *174, 195; agriculture, (121), (122), 173, *174, 175, 179, 180; climate, 173; future, 180; government, 178; home manufacturing, 175, 179; people, 175-180; size, 179; surface, 173, *174, 175, *177; trade and transportation, 175, 178-180; village life, *174, 175, 179.
Albert (*âl'bêrt*) **Lake**, 318.
Alexandretta (*âl'êg-zân-drê'tâ*), (3 O5), 46.
Alexandria (*âl'êg-zân'drî-a*), (14 R2), 30.
 alfalfa, 333, 400, 408.
Alger (*âl-jêr*) (*Algiers*), (52 P4), *85, 279, 283.
Algeria (*âl-jêr'î-a*), (14 P2), (53 P4), (280); desert, 17, 23, *24, 37; fruit, 448; Mediterranean section, 56-58, 61, 62-66, 73, 85-86.
Algiers (*âl-jêr'z*) (see *Alger*).
Algoa (*âl-gô'ô*) **Bay**, 286.
Alice Springs, (326 P3), 331.
 almonds, 62, 64.
Alps (*âlp*s) **Mountains**, (52 Q2), (116 N4), 61, 68, 69, 71, 72, 78, *120, 125, *132, 140, 160, 167, 170.

Alsace (*âl'sâs*), 126, 142.
Altyn Tagh, (214 R3), 220.
 aluminum, 142, 165, 180, 208, 387, 482.
Amasya (*â-mâ'sî'â*) (*Amasia*), *46.
Amazon (*âm'â-zôn*) **River**, (369 OP3), 364, *389; forests, 380-382, *380; Valley, 389-391.
Amsterdam (*âm'stêr-dâm*), (92 P2), 154.
Amur (*â-môor*) **River**, (215 W2), 218, 242.
Anatolia (*ân'â-tô-lî-â*) (see *Asia Minor*).
Andalucía (*ân'dâ-lôo-thî'â*), (52 O4), 80.
Andes (*ân'dêz*) **Mountains**, (362-363 NO3-6), *361, *364, 364, *365, 365, *373, 417-419.
Anglo-Egyptian Sudan, (278 Q4), (280); agriculture, 296; animals, *295, 295; cattle, *296, 296, *297; climate, *282, 296, 297; government, 296; people, 296; trade and transportation, 297.
Angola (*âng-gô'lâ*), (278 P7), (281), 314-315.
Angora (see *Ankara*).
 animal breeding, 468.
Ankara (*ân-kâ'râ*) (*Angora*), (53 V4), *48, 48.
Annam (*ân'âm*), (215 T5), 259.
Antabamba (*ân'tâ-bâm'bâ*), (362 N4), 418.
Antarctic (*ânt-ârk'tîk*) **Ocean**, 164.
 antimony, 228, 296.
Antofagasta (*ân'tô-fâ-gâ'stâ*), (369 N5), 412.
Antwerp (*ânt'wêrp*) (see *Anvers*).
Anvers (*ân-vâr*) (*Antwerp*), (92 P2), 130, 149, 150, 161, 201.
Apennine (*âp'ê-nîn*) **Mountains**, (52 R3), 61, 71, *73.
 apples, 347 (see also *fruit*).
 apricots (see *fruit*).
Arabia (*â-râ-bî-â*), (6), (14 T3), animals, *13, *16, *17, *18, *19, 19, *20, *21, *23; climate, 13, 16, *20, 26; coffee, 26; Empty Quarter, 21; future, 37; government, 36; migrations from, 22; nomads, *18, 20-23; oases, *17, 17, 18, 26; plants, *17, *18, 18; surface, 13, *13, *16, *19, *20, *21, *23, 26.
Arabian Sea (214 P5), 245, 248.
Arabs, 13, 20-26, 85, 267, 268, 295, 320 (see also *Bedouins*).
Archangel (*ârk-ân'jêl*) (see *Arkhangelsk*).
Arctic Circle, 166.
Arctic Ocean, (92-93), 204.
Argentina (*âr'gên-tê'nâ*), (369 O5-8), 399-408; agriculture, 400; cattle, *399, 399-402, *402, 405, 406, *408; cities, *401, 401; compared to

Uruguay, 404; corn, (437), 439; crops, 400, 406, 407, *407; dairying, 466; meat packing, 461; pampas, 399-400, *400; rainfall, 399, 400-401; size (410); soil and surface, 399, 405, 407; trade, 401-402; wheat, 432, (434).
Arkhangelsk, (93 T1), 95, 194, 203.
Arno (*âr'nô*) **River**, 73.
Arras, *148.
 asbestos, 314.
Asia (*â'shâ*; *-zhâ*), (2), (3), (6-7), (214-215), desert, 13-23; grasslands, 1-12, 200-201; grasslands-and-oasis section, 39-45; Iraq, 32-35, 38; Mediterranean section, 46-48; 83-85; Southern and Eastern, 212-263; tundra, 199, 204; climate, (56), (94), (95); occupations, (211); population, (57).
 (Refer by name to particular countries.)
Asia Minor (*â'shâ mî'nêr*) (*Anatolia*), (6), (53 U4); Mediterranean section, 56-58, 62-66; plateaus, 39, 46, 47; figs, 64; migrations to, (11), 11; rainfall, 39, 40, (56).
Astrakhan (*âs'trâ-kân*), (93 T3), 203.
Aswan (*âs-wân*) **Dam**, (14S3), 30, *31.
Atacama Desert, 412.
Athênai (*Athens*), (53 T4), *81, 81, 82, 176.
Athens (*ât'hênz*) (see *Athênai*).
Atlas (*ât'lâs*), **Mountains**, (14 O2), (53 O4), 17, 18, 22, 86, 279.
Auckland (*ôk'lând*), (327 Y4), 354.
Australia (*ôs-trâ'lî-â*; *-trâl'yâ*), (324), (326-327), Desert, (331), 331, 345, 349; grasslands (331), 331-339; Mediterranean Climate section, 346; Temperate Agriculture Section, 340-341, 347; tropics, (331), 331, 338, 341.
 (Refer by name to states.)
Austria (*ôs'trî-â*), (6), (92 Q3), (116 N4); lowlands, 169; mountains, *168, 168, *169; agriculture, (121), (122), 135-137, 169; climate, 169; forests and lumbering, 168-169; future, 169; government, 167-169; location, 167; manufacturing, 169; people, *167, 169; soil and surface, 168-169; tourists, *168, 169; trade, 167-169; water power, 169; wheat, 433, (434); Wien, 167-169.
 automobile, 425.
 aviation, *119, 209, *364, 364.
Azov (*â'zôf*; *â-zôf'*), **Sea of**, (93 S3), 201.
Baghdad (*bâg-dâd*; *bâg'dâd*), (14 T2), (32), 33, *34, 35.
Bahia (see *São Salvador*).

Bahrein (bā-rān) Islands, 36.
 Baikal (bī-kāl') Lake, (3 S2), 200.
 Baku (bā-kōō), (214 O2), *202, 202.
 balata (bāl'ā-tā), 387.
 Balboa, 79.
 Bali (bā'le), (264 O3), 268, 270.
 Balkan (bāl-kān'; bōl'kān), Countries, (6) (116), 61, 173-180.
 Balkan Mountains, (116 P5), 83.
 Baltic (bōl'tik) Countries, (6), (116), 187-197; corn, (437), 438; dairying, 465; flax, 484; forests and lumbering, 471; oats, 436.
 Baltic Sea, (92 Q2), (116 O2), 167, 187, 192, 195, 198.
 Baluchistan (bā-lōō'chī-stān'), (214 P4), 250.
 bamboo, *213, 213, 221, *257, *265, 266, 270, 276.
 bananas, Africa, 283, 289, 304, 313; Australia, 341, *348; China, 221; India, 252; Malaysia and Pacific Isles, *273, 276, 356; South America, 371, 378, 384, 391; Taiwan, 242.
 Bangka (bān'kā), 271.
 Bangkok (bāng'kōk'), (215 T5), 260, 261.
 Bantus, 302, 305, 309, 320.
 Barabudur, 266, *267, 269.
 Barcelona (bār'sē-lō'nā; bār'thā-lō'nā), (52 P3), 80.
 barley, 435, 436; Africa, 22, 27, 58; Asia, 200, 219, 227, 239, 243, 249; Australia and New Zealand, 341, 354; Europe, 58, 104, (121), 122, 156, 163, 168, 179, 185, 192, 195, 200; South America, 411.
 Barranquilla (bār'rān-kēl'yā), (369 N2), 370.
 Barrow (bār'ō), (101 O3), *109.
 Basel (bā'zēl'), (92 P3), 161.
 Basra (bās'rā), (14 T2), (32), 13, 35.
 Basutoland (bā-sōō'tō-lānd'), (278 Q8), (281), 302, 305-306, 316.
 Batum (bā-tōom'), (214 N2), 202.
 bauxite, 142, 180, 387.
 Bavaria (bā-vā'ri-ā), 125, 133.
 beans, 441-442; lima, 442; navy, 442; soy, 441-442, *442.
 beasts of burden, 425.
 Bechuanaland (bēch'ōō-ā'nā-lānd'), (278 Q8), (281), 302, 309.
 Bedouins (bēd'ōō-īns), *18, *20, 20, *21, 21, *23, 23, 33, *38, 86, 283.
 beef, Argentina, 399-400, *402.
 beets, fodder, 200.
 beets, sugar (see *sugar beets*).
 Beira (bā-ē'rā), (278 R7), 315.
 Belém (bā-lēn') (Pará), (369 Q3), 361, 389.
 Belfast (bēl-fāst'), (101 N3), 108, 115.
 Belgian Congo (see *Congo*).
 Belgium (bēl'jī-ūm; bēl'jūm), (6), (92 P2); agriculture, (121), (122), 134-141, 149, 150; cities, *149, 149, 150; climate, 138, 149; coal, 128, 142, 149, 150; colonial possessions, 296; flax, 115; future, 150; government and people, *150; location, 149; manufacturing and mining, 133, 149, 150; population, 149; rabbits, 135-136; soil and

surface, 138, 149; sugar beets, (121), 135-137; trade and transportation, 125, 149, *150, 150; wheat, 433, (434).
 Belgrade (bēl'grād') (see *Beograd*).
 Benares (bēn-ā-rēs'), (214 R4), 252.
 Bengal (bēn-gōl'), *250.
 Bengal, Bay of, (214 R5), 245, 248.
 Benguela, (278 P7), 315.
 Beograd (bā-ō-grād'), (116 P5), 177, *179, 183.
 Berbers (būr'bērz), 22, 85.
 Bergen, (92 P1), 166.
 Bering (bē'ring; bā'ring) Strait, (3), 198.
 Berlin (bēr-lēn; būr'ln'), (92 Q2), (116 N3), *119, 119, *131, 132, 133, 146, 167.
 Bern (bērn), (92 P3), 161.
 Bessarabia (bēs'ā-rā'bi-ā), 184.
 Bethlehem (bēth'lē-hēm; -lē-ēm), (14 S2), 22.
 Bhutan (boo-tān'), (215 S4), 250.
 Bilbao (bil-bā'ō), (52 O3), *79.
 Biscay (bīs'kā), Bay of, (92 O3), 141.
 Bismarck (bīz'mārk) Islands, (324 G6), 359.
 Black Forest, *123, 124.
 Black Mountains, 175.
 Black Sea, (3 O2), (53 V3), (93 S3), 39, 46, 51, 65, 70, 167, 170, 176, 198, 202.
 Boers (bōōrz), 301.
 Bogotā (bō'gō-tā'), (369 N2), *376, 376-377, 382.
 Bohemia (bō-hē'mī-ā), (117), 168, 170, *172 (see *Czechoslovakia*).
 Bolivia (bō-liv-ī-ā; bō-lē'vyā), (369 O4), 414-420, 488.
 Bombay (bōm-bā'), (214 Q5), 110, 252, 255, 256, 257.
 Bordeaux (bōr'dō'), (92 O3), 139, 140, 144, 173.
 Borneo (bōr'nē-ō), (264 O2), 265, 267, 271, *273.
 Bosphorus (bōs'pō-rūs), (Bosporus), Strait, (53 U3); *78, 78.
 Bothnia (bōth'nī-ā), Gulf of, (92 Q1), 162, 165, 187.
 Boulogne (bōō'lō-nī'; bōō-lōn'), (92 P2), 145.
 Bratislava (brā'tī-slā'vā), (116 O4), 172.
 Brazil (brā-zīl), (369 OPQ4), 389-398; agriculture, 396-397; animals, 389, *396, 396; cities, *392, 392, 397; cacao, *383; coffee, (460), *486; corn, (437), 439; crops, 391, 395, 397; forests, *389, *390, 389-390; 396-397, 473; history, 397; Japanese migration to, 394; meat, (458), (460), 461; people, 393, 394; resources, 390-391, 395; rivers, *389, 389; soil and surface, 392-393, 398; trade, 395.
 Brazil nuts, 391, *391.
 breadfruit, 356, 357, 371, 384.
 Bremen (brā'mēn; brēm'ēn), (92 P2), 130.
 Brenner Pass, 125, 167.
 Breslau (brēs'lou), (116 O3), 129.
 Brest (brēst), (92 O3), 145.

Brisbane (briz'bān), (327 S4), 340, 341, 351.
 Bristol (brīs'tīl), (101 O3), 109.
 British Empire, 97-100.
 British Guiana (gē-ā'nā), (362 P2), (369 P2), 386-388.
 British India, 246, 259 (see *India*).
 British Isles (see *Great Britain*).
 British Somaliland (sō-mā'lē-lānd'), (278 S5), 280, 300.
 Brittany (brīt'ā-nī), (88 O3), 90, 138, 144.
 Brno (brnō), (116 O4), 171.
 Broken Hill, (327 Q4), 349.
 Bruges (brūzh), (92 P2), *149.
 Brussels (brūs'ēlz), (see *Bruxelles*).
 Bruxelles (brüks-el') (Brussels), (92 P2), 150.
 Bucharest (bōō'kā-rēs't') (see *București*).
 buckwheat, 140.
 București (bōō-koo-rēs'tē), (116 Q5), 185.
 Budapest (bōō'dā-pēs't'), (116 O4), 170, *182, 183.
 Buddhist religion, 219, 235.
 Buenaventura (bū'nā-vēn-tū'rā; bwā'nā-vēn-tū'rā), (369 N2), 379.
 Buenos Aires (bō'nūs ā'rēs; bwā'nūs ī'rās), (369 P6), 365, 401, *401.
 buffalo, *299; water, (7), 249, 261, *275, *276.
 bulbs (flower), *151, 153.
 Bulgaria (bōōl-gā'ri-ā; bül-'), (93 R3), (6); Danube Valley, 173; mountains, 173, *174, 175; uplands, 179; agriculture, (121), (122), 173, 175, *176, 179, 180; climate, 173; fattening meat animals, 461; future, 180; government, 176, 178; home manufacturing, 175, 179; migrations to, 90; nuts, 452; people, 175, 176, 179, 180; surface, 173, *174, 175, *176, *177; trade and transportation, 173, 175, 179, 180.
 Burgundy (būr'gūn-dī), *139, 139.
 Burma (būr'mā), (3 R3), (7), (215 R3), 259-262; rice, 441.
 bushmen, 309.
 Bush Negroes, 386.
 butter: Africa, 296; Australia, 340, 341, 354; Europe, 109, 136, 139, 153, 156, 163, 192, 205, 209; South America, 402.
 cabbage, 224, 227, 230.
 cacao, *383; Africa, (280), 292, 293; Amazon Valley, 391; Brazil, 397; Ceylon, 259; Venezuela, 383, 384.
 Cairns (cārnz), (327 R2), 341.
 Cairo (kā'rō), (14 S2), 13, 30.
 Calais (kā'lā; kā'lā'), (92 P2), 145.
 Calcutta (kāl-kūt'ā), (214 R4), 245, 251, 252, 257.
 Calicut (kā'l-ūt-tūt), 248.
 Callao (kā'l-yā'ō), (369 N4), *416.
 Cambodia (cām-bōzh') (Cambodia), (215 T5), 259.
 camels, 4, *9, 9, *12, *13, *16, *17, *18, 19, *20, 21, 24, *27, *29, 30, 33, *38, 44, *200, (280), 283, 299, *352.

Cameroon (kām'ēr-ōōn'), (278 P5), (280); Equatorial Rain Forest, 287-294, 297; grasslands, 295-297. camphor, 242.
campos (kām'pōz), 398.
Canada: cattle, 459; dairying, 464; fruit, 447; forests and lumbering, 474; peat, 475; trade, 501; wheat, 432, (434), 435.
canals, 492-493, 494, *495; Belgium, *149, 149. Central Europe, 125; China, 226, *227, 227; Corinth, *82; Europe, (124); Holland, *152, 152, 154; India, 252, 253; Iraq, *33, 33, *35; South America, *386, *407, 415; Turkey, 49; U. S. S. R., 208.
Canberra (kān'bēr-ā), (327 S5), *350, 351.
Canterbury (kān'tēr'būr-rē) Plain, 354.
Canton (kān-tōn'), (215 U4), 230.
Cape Colony, 301-304.
Cape of Good Hope, (278 Q9), 79, 303.
Capetown, (278 P9), 284, 286, *301, 301, 303.
Capri (kā'prē), *51.
Caracas (kā-rā'kās), (362 O1), (369 O1), 384, *385.
Caribbean (kā'r'i-bē-ān) Sea, (362 MN1), (369 MN1), 371, 375.
Carpathian (kā-pā'thī-ān) Mountains, (116 P4), 167, 170, *172, 182, 184, 190.
Cartagana (kā-r-tā-jē-nā) (369 N1), 370.
Caspian (kā's-pi-ān) Sea, (3 P2), (32), (93 T3), 1, 5, 9, (11), 11, 39, *202.
cassava, Africa, 289, *300; South America, 371, 384, 391.
Cataluña (kā-tā'loo-nā), (52 P3), 80. cattle, 458, (458), 459, 460, 461: Africa, (281), 283, 284, *294, *296, 296, 299, 304, 305, 306, *310, 310, 314, 316, 319, 321; Asia, 4, (7), 39, 248, *252, 252; Australia, 338-341; Europe, 56, *83, 102, (122), 134, 136, 153, 156, 159, 169, 170, *181; South America, 365, 381, 396, *396, 398-404, *399, *408, 408.
Cauca (kou'kā) Valley, 379.
Caucasus (kō'kā-sūs) Mountains, (2 P2), 66, 198, *201, 202.
Ceara (sā'ā-rā'), (369 R3), 391.
Celebes (sē'l-ē-bēz), (264 P3), 267, 271, *273.
cement, 149, 157, 165, 195, 208, 482.
Cerro de Pasco (sēr'rō dā pās'kō), (362 N4).
Central Australia, (326 P3), 331.
Cetinje (tset'ēn-yā), (116 O5), *178.
Ceylon (kō'kō-lōn'), (7), (214 R6), *256, *257, 258; rubber, 487.
Chad (chād) Lake, (278 P4), 283.
Channel Islands, (101 O4), 97.
Charleroi (shār'lēroi'), 150.
chemicals, 126, 130, 488.
Chemnitz (kēm'nits), (92 Q2), 129.
Cherbourg (shār'boor'), (92 O3), 145.
chestnuts, 59-61, 76, 140.
Chile (chī'lī; chē'lā), (363 O5-8), (369 O5-8), (410), 410-413, *411, *412,

*413; fruit, 446; iodine, 507; wheat, 433, (434).
Chiloé (chē'lō-ā'), (369 N7), 410.
China (chī'nā), (3 S8), (7), (215 T4); Central, 226-228; Great Plain of North China, 212, 223-224; Manchuria, 242-244; South, 229-230; agriculture, 212-213, 216-217; 221-231; canals, 226-227; cities, 225, *228, 228, *230, 230; civilization, 221, 231; climate, 217-221, 224-226, 229-230, 234; coal, 478; dairying, 466; dependencies, 218-220; corn, (437), 438; fishing, 229, 457; forests and lumbering, 473; future, 229, 231, 232; government, 219, 231-233; grain sorghums, 438; location and size, (218), 218; lumbering, 221, 229; manufacturing, 212-213, 228, 231; mining, 221, 228, 229; modernization, 231; natural barriers, 220, 221; nuts, 452; people, *216, 216, 221-223, 228, *231, 231, 243, 262, 273; population, 217, 225, *229, 230; rice, *212, 226, 227, 229-230; soil and surface, *212, 218-226, 229; soy beans, 441; trade and transportation, 216, *218, *221, 221, 225-233, 244; vegetables, 444; wheat, 433, (434).
chinaware, 129, 157, *171, 171.
Choco, the, 379.
Chosen (chō'sen") (Korea), (7), (215 V3), 235, 240, 242-243; forests and lumbering, 473; fruit, 447; nuts, 452; soy beans, 441; swine, 462.
Christchurch, (327 5), 354.
Christiania (see Oslo).
chrome ore, 314.
chinchona (sīn-kō-nā'), (7), 270.
citrus fruits, 25, 65, (66), 66, 81, 221, 230, 285, *303, 303, 346, *347, 348.
Ciudad Bolívar (syōō-thāth' bo-lē-vār), (362 O2), 381.
Cliffden (klif'dēn), *115.
climate, arctic, 196, *197, 199; artificial, 322; climate and energy, 91, 372; continental, 95, 181, 189; Corn Belt, 181; desert, 16-17; dust storms, 224; droughts, 185, 217, 225, 329, 335, 338; Mediterranean, 56-57, 279, 284, *303, 303, 346; monsoon, 226, 239, 248, 260, 261; ocean currents, effect on, (97), 94, 95, 309, 409; oceanic, 95, 102, 181; plateau, 418; temperature (world), (94), (95); trade winds, 16, 94, 304, 321, 357, *358 (see also rainfall; winds).
clover, 64, 76, 122, 135, 139, 156.
cloves, 321.
Clyde (klid) River, (101 O2), 106, 108.
coal, 475-479, *475, (476), (477), *478: Africa, 304, 307-309, 314; Asia, 221, 228, 233, 240, 241, *243, 244; Australia, 349; Europe, (6), 105, (106), 106, 126, 128-130, 138, 142, 149, 150, 153, 171, 180, 190, 191, 202, (477); South America, 377, 413; Sumatra, 271.

Cochin China (kō'chīn chī'nā), (7), (215 T5), 259.
cocoa (see cacao).
coconuts: Africa, *320, 320; Australia, 341; Ceylon, *256, 258; East Indies, *270, *271, 271, 273; India, 252; Pacific Isles, 355, 360.
coffee: 486, (486), *486; Africa, (280), 299, 318, 322; Brazil, 392-394, *394; Colombia, 374-375, *374, 378, *394; East Indies, (7), 270, 271; India, 254, 256; Mocha, 26; Venezuela, 383, 384.
coke, 128, 142, 208.
Cologne (kō-lōn') (see Köln).
Colombia (kō-lōm'bē-ā), (362 N2), (369 N2), 370-384; agriculture, 376-377; animals, 372, *373, 379; cities, 374, 375, 376-377, 381-382; climate, 371, 377, 378, (381), 384, 385; coffee, (486), *486; crops, 371, 374-376, *383, 384; forests, *380, 380-381; fruit, 445; people, 377, 378-379; resources, 372, 377; rivers, *370, *371, 370-372; soil and surface, 372, 376-377, 378; trade, 370-375, 381-382.
Colombo (kō-lōm'bō), (214 R6), 258.
Columbus, Christopher, 79.
commerce (see trade).
communication, 427, *428; Atlantic cable, 429; mail, 427, *428; newspapers, 427; radio, *428, 429; stagecoach, 427; telephone, *428, 429; telegraph, 427, *428, 429; wireless, *428, 429.
Concepción (kōn-sēp'syōn'), (369 N6), 413.
Congo, Belgian (kōng'gō), (278 Q6), (280); Equatorial Rain Forest, 284, 287-294; tropic plateau, 314-315; agriculture, 288, 299; climate, 287; forest, 284, 288, 289; government, 296; insect pests, 287, 293; mining, *315, 315; oil palm, *291, 291; people, *288, 288, *289, *291, *293, 296; trade and transportation, 290, 293, 315.
Congo River, (278 P6), 285, 290, 291, 293, 322.
Constanta (kōn-stān'tā), (116 Q5), 185, *186.
Constantinople (kōn'stān'ti-nō'pl) (see Istanbul).
Coolgardie (kōol-gār'dē), (326 N4), 349.
coöperative farming, 114, 155, 156, 205.
Copenhagen (kō'pēn-hā'gēn) (see København).
copper, 79, 180, 195, 229, 241, (280), (281), 296, 309, 314, *315, 349, 412, 419, 482.
copra (kōp'rā), (7), 258, *271, 276, (280), 357.
Coquimbo (kō-kēm'bō), (369 N6), 410.
Corinth (kōr'inth) Canal, (53 T4) *82.
cork, (6), *61, 61.
corn, 436-439, *436, (437), *437, *438, *439, (439): Africa, 283, 289, 299, *305, 305, 306, 314, *320; Australia, 340, 341; Balkans, 175,

- 179; China, 216, 217, 221; Danube Valley, 173, 181, 185, 200; Mediterranean region, 81, 139; South America, 368, 371; U. S. S. R., 200.
- Corn Belt, 437-438: American, 437-438, *439; climate, 437; cattle and sheep, 459, 460; dairying, 465; European, 438; grain sorghums, 438; oats, *439; poultry, 462; swine, 438, *438, 462; typical farm, 458-459.
- Corsica (kór'si-ká), (52 Q3), 61.
- Costa Rica, fruit, 445.
- Côte-d'Or (kót'-dór'), *139, 139.
- cotton, growing, 483-484, (483), (484), *485: Africa (Central and Southern), 297, 299, *305, 313, 314; (Egypt), (6), 30, 110, (280); Brazil, 397; China, 216, 217, 221; Colombia, 372; cotton gin, 484; Gran Chaco, 406; India, (6), 250, 253, (254), 255, 256; Iraq, 35; manufacturing, Czechoslovakia, 172; France, 142, 143, 145; Köln, 128; Manchester, 109, 256; Osaka, 240; Peru, 415.
- Cotton Belt: corn, 439; cotton, 483.
- Crete (krēt), (53 U4), 54.
- Crimea (kri-mē'a), (53 V2), 65, 66.
- Croats (krōtz), 167, 176, 178 (see *Yugoslavia*).
- crocodile (krōk'ō-dīl), *379.
- Ctesiphon (tēs'fōn), (32), *34.
- Cuba: sugar, 449, *449; trade, 501.
- currents, (6), 64.
- currents, ocean, (91), 94, 95, 309, 409, 516.
- Cuzco (kōōs'kō), (369 N4), *414.
- Czechoslovakia (chēk'ō-slō-vi'kī-ā), (6), (92 Q3), (116 O4); Bohemia, 170, 171; Carpathian Mountains, 170, *172, *188; Slovakia, 170; agriculture, (121), (122), 135-137, 170-172; cities, 171, 172; forests, 170; manufacturing and mining, 133, 171, 172; Mongol invasion, 87, 90; people and government, *170, 170; soil and surface, 170, *172; sugar, *449; trade and transportation, 123, 168, 171, 172; wheat, 433, (434).
- Dairen (dī'rēn'), (215 V2), (242), 242.
- dairying, 463-466, *463, *464, (466), *466: Africa, 300, 319; Argentina, 402; Australia, 340-342; Europe, 69, 114, 136, 139, 153, 155-157, *159, 159, 161, 163, 169, 192, 291; Siberia, 205, 209.
- Dalmatian (dāl-mā'sh'ān) Coast, 173, *174.
- Damas (dā'mās) (Damascus), (3 O3), (32), (52 W5), 33, *83, 83.
- Damascus (dā-mās'kūs) (see *Damas*).
- Danube (dān'ūb) River and Valley, (53 T3), (92 R3), (116 P5), 83, 125, 167, 172, 177, 181, *182, 182, 183, *184, 185.
- Danzig (dān'ts'fk), (116 O3), 189.
- Dar-es-Salaam (dār-ēs-sā-lām'), (278 R6), *320.
- Darjeeling (dār-jē'ling), (214 R4), *250, 250.
- Darling (dār'ling) River and Valley, (327 R4), 331, 332, (345).
- date palms, *17, 23, *25, 25, 26, *35, 35.
- Dead Sea, (14 S2), (52), 37, *84.
- Deccan (dē-kān) Plateau, (249), 249, *255, 255.
- Delhi (dē'lē), (214 Q4), 246, 247, 252, 255.
- deltas, 28, 226, 251, 252, 370.
- Denmark (dēn'mārk), (6), (92 P2); agriculture, (121), (122), 155-157, 163, 183, 194; climate, 155; colonial possessions, *157, 157; dairying, 155-157, 291, 465, 466; government, 151, 156, 157, 166; migrations to, 87, 90; people, 157, 166; shipbuilding, 108; soil and surface, 155, 156, 183, 194; trade, 156, 157, 501.
- deserts: Arabian, (6), 13-22, 37; Argentina, 407; Australian, 331, 345, 349; Brazil, 368; Chile, 412, 413, *412; Egypt, 27-31, (280); Great, 13-22, 37, (280), 283; Iraq, (6), 33-35, 38; Kalahari, (281), 309; Peru, 365, 368, 415; Sinkiang, (7), 219; small oases, 23-26, (280); Thar (6-7), 248.
- diamonds, 150, 153, (281), *307, 307, *308, 387.
- Diaz, Bartholomeu, 79.
- Dijon (dē-zhōn'), 139, 146.
- dikes, *386.
- Djibouti (jē-bōō-tē'), (278 S4), 299.
- Dniepropetrovsk, (93 S3), *207, 208.
- Dniester (nē'pēr) River, (93 R2), 201, 207.
- Dominican Republic, cacao, *383; sugar, *449.
- Don (dōn) River, (93 S3), 202, 205.
- Drakensberg (drā'kēnz-būrg) Mountains, (15 R9), 304.
- Dresden (drēz'dēn; drās'dēn), (116 N3), 129, 133.
- droughts, 185, 217, 225, 329, 335, 338.
- dry farming, 57, 343.
- Dublin (dūb'lin), (101 N3), 114.
- Durazzo (dōō-rāt'sō) (see *Durrës*).
- Durban, (278 R8), 304, 309.
- durra, 27.
- Durrës (Durazzo), (116 O5), 179.
- Dutch East Indies (Netherlands India), 267, 268 (see *East Indies*).
- Dutch Guiana (gē-ā'nā), (362 P2), (369 P2), 386-388.
- Dvina (dvē-nā) River, (93 T1), 203.
- earth, 509; axis, 513; longitude, 512; moon, 510; ocean currents, 516; poles, 512; seasons, 514-515; shape, 513; tides, 511-512; time, 513-514; winds, 514, 516.
- earthquakes, 237, 240.
- East Indies (in'diz), (7), (264); agriculture, 270-271; climate, 269; dairy products, 466; forest, 265, 270; migrations to, 325; people, *265, 266, *270; soil and surface, *269, 270, 271; tin, 488; trade and transportation, 271.
- eclipse, 510.
- Ecuador (ēk'wā-dōr'), (362 N3), (369 N3), *383, 414-420.
- eggs, 462.
- Egypt (ē'jēpt), (14 R3), (280): cotton, 484; Desert, 17; flood plain, 27-31; Nile Delta, 28; agriculture, 27-31, *37; cities, *30, 30; cotton, 30; government, 30; people and population, 27-29; pyramids, *27, *29, 29; trade and transportation, 29, *37; vegetables, 444; villages, 28.
- Elbe (ēl'bē) River, (92 Q2), (116 N3), 125, 126, *130, 130, 171.
- El Callao (ēl kāl-yā'ō), 387.
- electricity (see *power transmission*).
- elephant, *259, *261, 261, 270, 289, *290, 295.
- Elizabethville, (15 R7), 315.
- El Oued (ēl-ōō-ēd'), (14 P2), *24.
- emeralds, Colombia, 377.
- England (ing'glānd), (2 O2), (6), (101 O3), cities, *108, 108, 109-112; climate, 94, 102, 104; coal, 478; linen, 508; migrations to, 90; nuts, 452; surface, 102-104; woolen goods, 507 (see *Great Britain*).
- English (ing'glīsh) Channel, (92 O2), (101 O3), 145, 146, 149.
- English walnuts, 46, 140, *141, 173.
- Entebbe, (278 R5), 312.
- entrepôt trade, 71.
- equator, 361, 364, 419, 512 (512).
- equinox, 515.
- Eritrea (ā'rē-trā'ā), (278 R4), 298, 300.
- erosion, 468-470, *469, (469), *470.
- Essen (ēs'ēn), (92 P2), *128.
- estancias, 403.
- Estonia (ēs'tō-nī-ā), (6), (116 P2); agriculture, (121), (122), 192; forests, 192; future, 197; location, 187; people, 192, *193; ports, 193; surface, 192; trade, 197.
- Ethiopia (ē'thī-ō'pī-ā) (Abyssinia), (14 T5), (278 R5), (280); agriculture, 299; climate, 298, 299; government, 298; Italian colonization, 300; people, 298, *300, 310; soil and surface, 27, 299; transportation, *298, 299.
- Etna (ē'tnā), Mount, (52 R4), 65, *76, 76.
- Euphrates (ū-frā'tēz') River, (2 P3), (32), 20, 22, 32.
- Eurasia (ūr-ā'shā; -zhā), (2), (6-7).
- Europe (ūr'ūp), (2), (3), (6), 50-211, (92-93); Mediterranean section, 50-82; Northwestern, Central, and Eastern, 87-209; barley, (121); canals, (124); cattle, (122); citrus fruits, (66); dairying, 465; fishing, 456, 457; forests and lumbering, 472, 473; fruit, 446; grapes, (66); languages, 90; migrations, 87, 90; navigable rivers, (124); oats, (121); occupations, (211), 426-427; olives, (66); people, 87, 90; population, (57), 426-427; potatoes, (121); rain-

fall, (56); sugar, 450; vegetables, 444.
(Refer by name to particular countries, industries, and products.)
eucalyptus trees, 328.
Everest (ëv'er-ëst), Mount, (214 R4), *250.

Falkland (fôk'lând) Islands, (369 P8), 409.

famines, 210, 225, 232, 255, 257.
farming, coöperative, 114, 155, 156, 205; dry, 57, 343; equatorial rain forest, 288; four-story, 375, 383-384; government aid to, 156, *300; intensive, 76, 122, 153, 156; irrigation (canals, dams, and wells), 46, 57, 65, 67, *68, 68, 76, 208, 227, 252-255, 297, 345, 358; (flood plains), 27-35, *37, 182, 183, 224, 226, 232, 252, 260-262, *270; (kanats), *40, 41, 250; (oases), 24, *25, *33, 35; (tunnels), 358; Mediterranean region, 55-69, 76; mountain stream region, *365, 368, 378, *415, 415; mountain terrace, 26, 57, *59, 59, *64, *67, 69, 83, *118, 123, *174, *212, *229, 229, 238, *266, *270, *271, 271, 378-379, 414, 420; pampas, 399-400, *400; thatch-and-patch, 245, 364, 368, 378-379, 397, 405; three-story, 25; two-crop, 217, 222, 230; two-story, *62, 64, 65, 69.

fellahin, 28, 29.

Fernando Pô (fër-nân'dô pô) Island, (278 O5), 293.

fertilizer, 126, 130, 412-413, 439, *467, 467, 486.

Fiesole (fë-ë-sôl), (52 R3), 73.

figs, *25, 49, 62, 64, 173, 346, 347.

Fiji (fë-jë) Islands, (324 J7), 359.

Filipinos (fil'pë-nôs) (see *Philippine Islands*; *people*).

Finland (fin'lând), (6), (93 R1); Great Northern Forest, *194, 195, 200; tundra, 196-197, 199; agriculture, (121), (122), 194, *195; climate, 194, 195; forests and lumbering, 168, 194-196, 203; future, 197; government, 194; location, 187; migrations to, 90; mining, 195; people, 194, 196, 199; reindeer, *197; surface, 194, 196, *197; trade and transportation, 195-197; water power, 195.

Finland, Gulf of, (116 Q1), 187.

fjords, *162, 162, 164.

Firenze (fë-rënt'sä), (52 R3), 73, 132.
fishing, (6), 144, 153, *227, 229, 238, 262, 309, 316, 454-457, *454, *455, *456, *457; banks, 454; canning, 456; culture, 457; future of, 457; river fisheries, 456.

flax, 115, 142, 143, 175, 190, 192, 200, *435, 435, (441), 484, *485.

flaxseed, 400.

Florence (see *Firenze*).

forests and lumbering, 471-474, (471), *472, *474; Adirondacks, 471; Africa, *282, 283, 287-294, 320, 321; Asia, 244, 248-249, 251; Australia, 341; East Central

U. S., 472; Europe, 59-61, 68, 76, 122, *123, 123, 140, 156, 159, 160, 162-164, *165, 169, 170, 185, 191, 192, *194, *198, 200, 203, 471, 472, 473; equatorial rain forest, 265, 270, *280, *282, 283, 284, 341; Great Lakes Region, 471; Great Northern Forest (taiga), (6-7), *194, *198, 200, 472; Malaysia, 265, *269, 270; Orient, 473; Pacific coast, 474; Rocky Mountains, 473; South America, 364, 378, *380, 380-382, 387, 389, *390, 390, 393; Southern States, 473.

Formosa (fôr-mô'sä), (see *Taiwan*).

Fortaleza (see *Ceara*).

fossils, 328.

France (frâns), (6), (52 O2), (92 P3); Mediterranean section, 50-67, 72, 139, 141; North Central and Northeastern, 138; Northwestern, 95, 138; Uplands, *140, 140, 141; agriculture, (121), (122), 134-141, 143, 145; art and architecture, 147; cattle and sheep, 461; chest-nuts, 59-61, 140; cities, 138, 140, 142-148; climate, 72, 95, 138, 139; colonial possessions, 83, 85, 232, 259-261, 286, 321, 360; corn, 139, (437), 438; dairy products, *466; forests, 140-141; fruit, 448; government, 143, 147-148; grapes, 63-64, (66), 139; manufacturing and mining, 126, 128, 133, 138, 139, 142, 143, 148; migrations to, 87, 90; nuts, 452; olives, *62, 62, *64, (66), 144; people, 134-137, 148; resort and travel business, 72, 146-148; shipbuilding, 130; silk, 507; soil and surface, *134, 134, *135, 138-141, *142, *144; sugar beets, (121), 135-137, *449; trade and transportation, 125, 142-146; water power, 142; wheat, 433, (434).

French Equatorial Africa, (278 P5), (280); equatorial rain forest, 287-294, 297; grasslands, 295-297; agriculture, 288, 291, 292, 297, 299; animals, 288, *290, 290, *295, 295; climate, *282, 283, (284), 284, 285, 287, 292, 295-297; government and people, 288, 296; trade, 291-293, 297.

French Guinea, (278 M4), (280); equatorial rain forest, 287-294, 297; grasslands, 295-297.

French Guiana (gë-ä'nä), (369 P2), 386-388.

French Indo-China (see *Indo-China*).

French Somaliland (sô-mäl'të-lând'), (278 S4), (280), 298-300.

French West Africa (278 N4), (280); desert, 13-26, 283; grasslands, 295-297; animals, 18, *295, 295; climate, 13, 16, *20, *282, 295-297; government and people, *18, *20, 21-23, 296; soil and surface, 13; trade and transportation, 297.

fruit, 445-448, *445, *446, (447), *447; Africa, *17, 23, *25, 25, *35, 35, (287), 303; Asia, 239, 250, 254; Australia, 341, 345-348; South

America, 402, 407, *407, 411; Turkey, 49.

Fujiyama (fôo'jë-yä'mä), *234, 234. fur industry, 129, 200, 337.

Galati, (116 Q4), 185.

Galilee (gäl'të-lë), Sea of, (52), *83.

Galway (göl'wä), (101 N3), *115.

Ganges (gân'jës) River and Valley, (214 R4), 251-255.

gauchos (gou'chôz), Argentina, 399.

Gdynia (g'dën'yä), *189, 189.

Genève (jë-në'vâ) (see *Genève*).

Genève (jën-äv') (Geneva), (92 P3), 161.

Genoa (jën'ô-ä) (see *Genova*).

Genova (jën-ô-vä) (Genoa), (52 Q3), 65, 70-72, 108, 201.

Georgia (jôr'jî-ä), (93 T3), *201.

Germany (jür'mân-t), (6), (92 Q2), (116); highlands, *118, 123-125; Lower Rhine Valley, 128-129;

plains, 121-122; agriculture, 118, 121-123; chemicals, 488, 507; cities, *119, 124, 125, 128-131; climate, 122; colonial possessions, 232; corn, (437), 438; education, 119, 120, 126; fertilizers, 507; forests, 122-124; future, 133; government, 118, 119, 133; lignite, 478; location, 130; manufacturing and mining, 119, 126-130, 133, 142; migrations from, 90; nuts, 452; peat, 475; people, 131; relations with Poland, 188, 189; Saar Basin, 128; shipbuilding, 108, 119, 131; soil and surface, *118, *120, 122, 124; sugar beets, (121), 122, 135-137, *449; tourists, 123; trade and transportation, 119, 124, 125, 128, 129-131; wheat, 433, (434), 434.

Ghats (gôts) Mountains, (214 Q5), 248, 255.

Gibraltar (jî-brôl'tër), Straits of, (52 N4), 66.

ginger, 230.

giraffe, 295, *311.

glaciers and glacial soil, 162, 165, 189, *194, 194.

Glasgow (gläs'gô), (101 O2), 106, 109, 202.

glass, 130, 149, 150, 171, 172, 482.

Goa (gô'ä), 286.

goats, Venezuela, 384.

gold, 482, *482; Africa, (280-281), 296, *307, 314; Australia, 349; South America, 387; Yugoslavia, 180.

Gold Coast, (278 N5), 287-294, 297, *383.

Goode's, John Paul, projection, (515)

Gorki (gôr'kô) (Nizhni Novgorod), (93 T2), *266, 209.

Gotland, (204 P2), *273.

Göteborg (yô'të-bôry'), (92 Q2), 166.

Gothaib, (156).

Granada (grä-nä'dä), (52 O4), 81.

Gran Chaco (grän chä'kô), 405, 406.

Grand Canal, (215 U3), 224, 226, *227.

granite, 195.

grapes, (6), 56, 62, (66), 76, *118, 123, *139, 139, 173, (280), 346, 407, 411.

graphite, 258, 322.

grasslands: African, (280-281), *282, 283, 284, *290, 295-300, 311, 314-319, *327; arctic, 196, *197, 199; Asiatic, 1-12; Australia, 331-339, 342-344; India, 248; Madagascar, 321; New Zealand, 354; South America, 372, 377, 380-381, *399, 399-404, U. S. S. R., 199-200, 204, *205.

gravitation, 511.

s'Gravenhage (sgrá'vën-häg) (The Hague), (92 P2), 154.

Great Australian Basin, (326 O5), 329, 344.

Great Britain (brít'n), (6), (92 O2), (101); agriculture, 104, 106, 114, (121), (122); cities, 106, 108-112, 115; climate, 94, 95, 102, 114; coal, 105-106, 110, 114, 478; colonial possessions, 83, 97, 100, *230, 230, 232, 246, 247, 250, 256-260, 267, 271, 286, 301, 302, 312, 353, 358, 359; dairying, 114; empire building, 97; government, 100; harbors, 106, 108-110; iron, 106; manufacturing, 105-107, 109, 110, 112, 115; people, 100, 112; sheep, 102-104, (122); shipbuilding, 104, 106-108, 115; surface, 100, 102-104, *113; trade, 104, 106, 109-113, 125, 136, 256; unemployment, 112; wheat, 433, (434).

Great Britain and Northern Ireland, 97.

Great Desert (Sahara Desert), (14), (280); animals, *13, *16, *17, *18, 18, *19, *20, *21, *23; climate, 13, 16, *20; future, 37; nomads, *18, 20-23; oases, *17, 17, 18, 23-31, 283; plants, *17, *18, 18, 283; roads, *33, 33, *37; size, 13; surface, 13, *13, *16, *19, *20, *21, *23, 283.

Great Northern Forest (the taiga), (6-7), 200, *194, *198.

Greece (grés), (6), (53 T4), (93 R4), 54, 56-58, 61-66, 81-83, 87, 90, (121), (122), 176; dairy products, *46; fruit, 448.

Greenland, (264), *156, 157.

Greenoble (grë-nô'bl), (92 P3), *142, 143.

Guam (gwäm), (264 R1), (324 F4), 360.

guano, 309.

Guatemala, coffee, (486), *486.

Guayaquil (gwí'ä-kel'), (362 N3), 419.

Guiana (see *British Guiana*, *Dutch Guiana*, and *French Guiana*).

Guinea (gin'y) Coast, (278 N5), (280), 291, 292.

Guinea, Gulf of, (278 N5), 291, 293.

Gulf Stream, 94.

gum arabic, 297.

Hague (häg), The (see *s'Gravenhage*).

Hamadan (hü'mü-dän), (214 N3), *40, 41.

Hamburg (häm'böörkh), (92 Q2), (116 N3), 108, 125, *130, 201.

hamm, *263.

Hammerfest (häm'er-fëst'), (92 R0), *166, 166.

Hangchow (häng'chö), (215 V3), *227, 228.

Hankow (hän'kò), (215 U3), 216.

Han (hän) River, (215 U3), 223, 224, 228.

harbors: Africa, 286, *301; Asia, *228, 228, *230, 230, 240, 252-255; Australia, *349; East Indies, 272, *273; Europe, 106, 108-110, *130, 130, 144-145, *149, 149, *154, 185, *186, *189; Philippines, 276; South America, 365, 370, *392-393, *404, *416, 416.

Havre (ävr'), (92 P3), 145, 146.

Hawaiian (hä-wí'yän) Islands, (324 M3); agriculture, 357; climate, 357, *358; crops, 358; fruit, 445; government, 357; population, 358; soil and surface, 357; sugar, 449; trade, 358.

hay, 68, 103, 104, 114, 135, 139, 156, 158, 163, 169, 195, 333, 340.

Heidelberg (hi'del-bürg), *120.

Helsingfors (hël'sing-förs) (see *Helsinki*).

Helsinki (hël'sin'kë) (Helsingfors), (93 R1), 196.

hemp, (7), 276, 277, 484.

hides, (6-7), 221, 223, 248, 251, 254, 256, 299, 317, 321, 339, 382, 396, 400.

Himalaya (hi-mä'lä-yä) Mountains, (214 Q3), 245, 249-253, 256.

Hindus (hin'döoz), *245, 245, 302, 304, 320, 359 (see also *India; people*).

Hobart (hö'bärt), (327 R6), 340.

hogs (see *swine*).

Hokkaido, (3 U2), 234.

Holland (höl'länd), (Netherlands), (6), (92 P2); agriculture, (121), (122), 152, 153, 183; bulbs, *151, 513; cities, 153-154; colonial possessions, 267-268; dairying, 153, 291, 465; fishing, 153; government and people, 151, 152, 166; manufacturing, 153; peat, 475; reclaiming sea bottom, *152, 152; shipbuilding, 108; soil and surface, *151, *152; trade and transportation, 108, 153, *154, 154; wheat, 433, (434).

homolographic projection, (515).

honey locust, 448, 451.

Honduras, fruit, 445; trade, 500-501.

Hongkong (hōng'kōng'), (215 U4), 218, 221, *230, 230.

Honolulu (hō'nō-lōo'loo), (324 M3), 358.

horses, 4, 9, *21, 21, 56, 134, 136, 296, 299, 306, 400.

Hull (hil), (101 O3), 109.

Hungary (hūng'gá-rí), (6), (92 Q3), (116 O4); Corn Belt, 181; mountains, *182, *183; agriculture, (121), (122), 135-137, 181-183; climate, 181, 183; fattening meat animals, 461; forests, 182; future, 183; government, *182, 182; manufacturing, 182, 183; migrations to,

87, 90; part of Austria-Hungary, 168, 182; people, 182; soil and surface, 182, 183; transportation and trade, 133, 168, 181, 183; wheat, 434, (434).

Hwang (hwäng) River, (215 U3), 223, 224, 226.

Hyderabad (hi'dër-ä-bäd'), (214 Q5), 255.

Iberian (i-bë'rí-än) Peninsula, (52 N3), 79-81.

Iceland (is'länd), (92 N1), 157.

Iguassu (ë'gwä-soö') Falls, (369 P5), *406.

Incas (ing'käz), *414, 414, *417.

India (in'di-ä), (3 R3), (7), (214 Q4); Deccan Plateau, (249), 249, *255, 255; low plains, (249), 249, 251-254; mountains, 39, 40, (249), 249, *250, 250; agriculture, 248-257; animals, 254; cities, 245, 246, 251-257; climate, (248), 249-252, 254, 255; cotton, 110, 250, 253-256; domestic animals, 248, *252, 252, *257; forests, 248-251, 254; future, 257, 258; government, 97, 246, 247, 250, 257; jute, 252, 256, 486; migrations, (11), 11, 245, 260, 267; manufacturing, 252, 254-256; people, 245-250, 257, 262; rice, 249, 250, 252, (254), 254, 255, 440, 441; soil and surface, 248, 250-252, 254, 255; trade and transportation, 250, 252-257.

Indian Desert (see *Thar Desert*).

Indian Ocean, (278 S8), *320, 321.

Indians, South America, 378, 387, *388, *398, 410, 413, 417, *477, 419.

Indo-China (in'dö-chí'nä), French, (3 S4), (7), (215 T5); climate, 260; people, 260-262; rice, 261-262, 441; trade and transportation, 262.

Indus (in'düs) River and Valley, (3 Q3), (214 P4), 27, 245, 248, 251-255.

Industrial Revolution, 106.

industry, development, 421: small neighborhood, 421; large neighborhood (see *manufacturing*).

Inner Mongolia (see *Mongolia*).

Innsbruck, 167.

insect pests, *270, 286, 470: locusts, *319; mosquitoes, 252, 286, 287, 293, *320, 320, 371, 377; tsetse fly, 293, 320; white ants, 338.

Iquitos (ë-kë'tös), (369 N3), 364, 389.

Iran (i-rän), Plateau of, (6), (214 O3), 39, 40, 250.

Iraq (ë'räk'), (6), (14 T2), (32); Desert, 13, *19; oases, 27, 32-35; ancient civilization, *32, 32, 33, *34; climate, 37; cotton, 35; dates, *35, 35; future, 35, 37; government, 35; pearl fishing, 35; petroleum, 35, 110; wheat, 35.

Ireland (ir'länd), (6), (92 O2); agriculture, 114; cities, 114, 115; climate, 95, 102; dairying, 465; government, 97, 100; linen, 508; manufacturing, 115; oats, 436; peat, *114, 114, 475; potatoes,

114; shipbuilding, 106-108, 115 (see *Great Britain*).
Irish Free State, (101 N3), 97, 100, 114.
iron, 480-482, (481), 488, 496, 497; Africa, 288, 296, 309; Austria, 169; Belgium, 148; Brazil, 395; British Isles, 106; China, 221, 228; Czechoslovakia, 171, 172; Finland, (6), 195; France, 142; Germany, 128, 129, 130; Hungary, 183; Luxembourg, 150; Manchuria, 244; Poland, 190, *191; Spain, *79, 79; Sweden, 165; U. S. S. R., 202, 208; Yugoslavia, 180.
irrigation, canals, dams, and wells, 46, 57, 65-68, 76, 208, 227, 252-254, *255, 297, 345; flood plains, 27-35, *37, 182, 183, 224, 226, 232, 252, 260-262, *270, *386, *407, 415; kanats, *40, 41, 250; mountain streams, *365, 368, 378, *415, 415, 420; oases, 24, *25, *33, 35; tunnels, 358.
Isfahan (is'fā-hān'), (3 P3), 41.
Isle of Man, (101 O3), 97.
Istanbul (ē-stān-bool'), (3 O2), 47, 48, 70, *78, 78, 146, 175, 176.
Italian Somaliland (sō-mā'lē-lānd'), (278 S5), (280), 298-300.
Italy (it'ā-lī), (6), (52 R3), (93 Q3); Mediterranean section, 56-67, 73-77; mountains, 68-72; agriculture, 55-69, 76, (121), (122); chestnuts, 59-61, 69; cities, 70-75; climate, 56-59, 58, 65, 72; colonial possessions, 37, 85, 298; dairy products, *466; emigration, 77, 200; fruit, 448; future, 76; grapes, 56, 62, 63, (66); manufacturing, 71-73, 77; marble, *77, 77; migrations to, 87, 90; nuts, 452; olives, 62-63; *64, (66), 66; resort and tourist business, *67, 69, 71-73; silk, 69; trade, 66, 69, 71, 75, 77, 125; vegetables, 444; water power, 71, *72, 75, 77, 143.
ivory, *290, 290, 299.
ivory nuts, *377, 378, 416.
Izmir (Smyrna), (53 U4), 64, 66.
Jaffa (yā'fā; jā'fā), (52 N6, 53 V5), 65, 66.
Jamaica, fruit, 445.
Japan (jā-pān), (7), (215 W3); agriculture, 234-236, 238-241; cities, 237, 240, 241; climate, 234, 235, *237, 239; coal, 478; culture, 235, 236, 241; exports, 239-241; fishing, 238, 456, 457; food problem, 241-244; forests, 234, 473; government, 236, 237, 240, 242, 244; homes, *235, 238, 240; imports, 240, 241; Manchuria and Taiwan, 232, 242-244; migration, 242, 394; manufacturing, 237, 240, 241; modernization, 236; nuts, 452; people, *234, 237, 239, 243; population, 238; rice, 235, 238, 239, 440, *440; silk, 235, 238-239, 241, 485; soy beans, 441; surface, 234; tea, 239, *240; trade and trans-

portation, 241, 242, 244, 501; vegetables, 444.
Java (jā'vā), (7), (264 N3); agriculture, 269-270; climate, 269; forest, 265, 270; government, 267-270; people, 266-269, *270; soil and surface, *268, *269, 269; sugar, 449.
Jehol, (242).
Jena (yā'nā), *126, 126.
Jericho (jēr'ī-kō) Road, *38.
 jerked beef, 396, *396, 399.
Jerusalem (jē-rōō'sā-lēm), (14 S2), (52 O7; 53 W5), 22, *84, 84.
Jibuti (jē-bōō'tē) (see *Djibouti*).
Johannesburg (yō-hān'sē-būrg), (278 Q8), 307.
Joppa (jōp'pā) (see *Jaffa*).
Jordan (jōr'dān) River, (14 S2), (52), 22, 84, 299.
Jujuy (hōō-hwē'), (369 O5), 407.
jungle (see *forests: Equatorial Rain Forest*).
junks, *221.
Jura Mountains, (88 P3), 160.
jute, (7), 252, 256, 484, 486.
Jutland (jūt'lānd), 90, 125.
Kabul (kā'bōol), (3 Q3), 11.
Kafir corn (sorghum), 305, 306, 310, 314, 438, 439.
Kafrs (kā'fērs), 305, *306.
Kalahari (kā'lā-hā'rē) Desert, (15 R8), 309, 321.
Kalgoolie (kāl-gōōr'li), (326 N4), 349.
Kamchatka (kām-chāt'kā), (2 U2), 234.
kanats, *40, 41, 250.
kang, 216, *217.
karangaroo, *328, 329.
Kano (kā'nō), (278 O4), 296.
Karachi (kā-rā'ché), (214 P4), 248, 253, 257.
Karakoram Mountains, (214 Q3), 220.
Karoo (kā-rōō'), 304.
Kashgar (kāsh'gār'), (214 Q3), 218.
Kashmir (kāsh'mēr'), (214 Q3), *246, 249, *257.
Katanga (kā-tān'gā), (15 R6), 314-315.
Kazaks, 5.
keawe tree, *360, 360.
Kenya (kē-nyā'; kēn'yā), (278 R5), (280); high plateau region, 315-319; lowland region, 320.
Kermanshah, (214 N3), *42.
Khyber (kī'bēr) Pass, (3 Q3), 11, *12, *246.
Kiev (kē-ēv), (93 S2), 209.
Killarney (kī-lār'nī), (101 N3), *114.
Kilmanjaro (kīl'mān-jā'rō), Mount, (315 S6), *311.
Kimberley (kīm-bēr-lī), (278 Q8), 307.
Kiolen (kyē'lēn) Mountains (see *Kjölen Mountains*).
Kirghiz (kīr-gēz'), 1-5, *8, 8, 11, 196.
Kjölen (kyē'lēn) Mountains (Kio-len), (88 Q1), 162.
Klaipeda (Memel), (92 R2), 193, 197.
Kobe (kō'bē), (215 W3), 240.

Köbenhavn (kō'bēn-hā'vn) (Copenhagen), (92 Q2), 108, *156, 157.
Kola (kō'lā) Bay, (93 S1), 95.
kola nuts, 297.
Köln (kōln) (Cologne), (92 P2), 128.
Korea (kō-rē'a) (see *Chosen*).
Kosciusko (kōs-ē-ōōs'kō), Mount, (327 S5), 351.
Koweit (kō'wāt'), 36.
Kowloon Peninsula, *230.
Krakatoa, 269.
Kufra, 283.
Kunene River, 301.
Kurdistan (kōōr'dī-stān'), 40.
Kurds (kōōrds), 40.
Kuznetsk, 208.
Kyoto (kyō'tō), (215 W3), 240.
Kyushu (kyōō'shoo') Island, (215 W3), 234, 240 (see *Japan*).
lac, 256.
lace, *160, 160.
La Guaira (lā guī'rā), (369 O1), 384.
Lahore (lā-hōr'), (214 Q3), 247.
Laos (lā'ōz), (215 T5), 259.
La Paz (lā pās'), (369 O4), *418, 418, 419.
Lapland (lāp'lānd), (6), (93 R1), *196, 196, *197.
Lapps (lāp'z), (6), *196, 196, *197.
latex (lā'teks), 387, 390, *390 (see *rubber*).
latitude, 512, (512).
Latvia (lāt'vī-ā), (6), (93 R2); agriculture, (121), (122), 192; flax, 115, 192; forests, 192; future, 197; location, 187; people, 192; ports, 193; surface, 192; trade, 197.
Lausanne (lō'zān'), (92 P3), 161.
lava, 255, 307 (see also *volcanic soil*).
lead: Australia, 349; Belgium, 149; Poland, 190.
League of Nations, 83, 189, 298, 302, 360.
leather (see *hides*).
Leeds (lēdz), (101 O3), 109.
legumes, 58.
Leipāja, (Libau), 193.
Leipzig (līp-tsīkh), (116 N3), 129.
Lemberg (lēm'bērkh) (see *Lviv*).
lemons, (6), 65, (66), 348, 411.
Lena (lyē'nā) River, (3 T1), 204.
Leningrad (lēm'īn-grād), (Petrograd), (93 S2), (116 R2), 187, 206, 207, 209.
Leopoldville (lā'ō-pōld-vīl'), (278 P6), 290.
Lhassa (lās'ā), (Lassa), (215 S4), (218), *219, 219.
Libau (lī'bou) (see *Leipāja*).
Liberia (lī-bē'rī-ā), (278 N5), (280), 286, 291-292.
Libia (līb'ī-ā) (see *Libya*).
Libya (līb'ī-ā) (Libia), (14 Q3), (53 R5), (280); Desert, 13-26, 283; Mediterranean section, 56-58, 62-66, 78, 85-86.
Liège (lī-āzh), (92 P2), 150.
Lille (līl), (92 P2), 142.
Lima (lī'mā), (369 N4), 365, *416.
limes, (66) 356.
limestone, 195.

- Limpopo** (līm-pō'pō) **River and Valley**, (278 Q8), 301, 302, 305, 320.
 linen, (6), 115.
 lion (281), *295, 295, *297, *316, 316.
Lithuania (līth'ū-ā-nī-ā), (6), (116 P2); agriculture, (121), (122), 192, *193; forests, 192; future, 197; location, 187; people, *192, 192, *193; ports, 193; relations with Poland, 189, 197; surface, 192; trade, 197.
Little Karoo (kā-rōō'), 304.
Liverpool (līv'ēr-pōōl), (101 O3), *108, 109.
 llanos (lā'nōz; lyā'nōz), 381, 382.
 llama (lā'mā), 417, *417, 418.
Lloyd Barrage, *253, 253.
 locusts, *319, 405, *405.
 lódz (lódz), (116 O3), 191.
 loess, 168, 185, 224, *225.
Lofoten Islands, (92 Q1), *164.
Lombok, (264 O3), 268, 270.
London (lūn'dān), (101 O3), *97, 109-112, 132, 145, 201.
 longitude, 512, (512).
Lorraine (lō-rān'), 128, 142.
Lourenço Marques (lō-rēn'sō mār-kēs), (278 R8), 286.
Lucknow (lūk'now'), (214 R4), 252.
 lumbering: Africa, *287; Asia, 221, 229, *261, 261; Europe, *123, 123, 140, 141, 159-160, 162, 164, *165, 169, 170, *177, 185, 192, *193, 195, 203, *204; South America, 397, 399 (see also *forests*).
Luxembourg (lūk'sān'bōōr'; lūk'sēm-bōōr), (92 P3), 133, 150.
Luzon (lōō-zōn'), (274 O4), 275, 276.
Lwów (lwoōv), (Lemberg), (116 P4), 191.
Lyon (lī'ūn, lē'ōn'), (92 P3), 143.
 lyre bird, *328.
Macassar (see *Makassar*).
 machinery, 421: cotton gin, 484; ditching, 494; electric, *490-491; farm, *436, 435, 436, 440, 493; farm, *436, 435, 436, 440, 493; iron machines, 480; laundry, 494; locomotives, 481; machine tools, 480, 492, *492; making of, 490, 491, 493, 494; milking, *464; mining, *482, 494; paper-making, *430; rolling-mill, 481-482; steam shovel, 481, 494; sugar mill, 449; testing, *492; whaling, 456, *456.
Madagascar (mād'ā-grās-kār), (278 S7), 321.
Madoera (Madura), (214 Q6), *246, 268.
Madras (mā-drās'), (214 R5), 254.
Madrid (mā-drid'), (52 O3), 81.
Madura (see *Madoera*).
Magallanes (mā'gāl-yā'nās), (369 N8), 409.
Magdalena (māg'dā-lē'nā) **River**, (362 N2), (369 N2), 370-373, *370.
Magellan (mā-jēl'ān), **Strait of**, (369 N8), 368.
Magnitogorsk, 208.
Magyars (mōd'yōrz), 90, 178, 182, 184.
 mahogany, *287, 293.
 mail, 427, *428.
Main (mān) **River**, (116 M3), 125, 167.
Majorca (see *Mallorca*).
Macassar (mā-kās'rā) (Macassar), (264 O3), 271.
Malaga (māl'ā-gā; māl'ā-gā), (52 O4), 65, 66.
 malaria, 293, 320, 379, 387.
Malay (mā-lā') **Peninsula**, (7), (264 N2); agriculture, 272; climate, 269; forest, 265; government, 272; people, *265, 266, 272; rubber, *272, 272, 487; Singapore, 271; soil and surface, *209; tin, 488.
 Malays, 235, 260, *265, 266, *270, *272, 275, 321.
Malaysia (mā-lā'shā; -zhā), (264) (see *East Indies*; *Malay Peninsula*; *Philippine Islands*).
Mallorca (mā-yōr'kā) (Majorca), (52 P4), *63, *74.
Manaos (mā-nā'ōs), (369 O3), 361, 364, 380, 389.
Manchester (101 O3), 109, 256.
Manchukuo, (218), (242), *242, 243 (see *Manchuria*).
Manchuria (mān-chōō'rī-ā), (3 T4), (7), (215 V2), 200, 218, 220, 232, 235, 242-244; coal, 478; Japanese migration to, 242; soy beans, 442; wheat, (434), 435.
 mandates, 83, 302, 360.
 manganese, 395.
 mangoes, 371.
Manila (mā-nīl'ā), (274 O4), 275, *276, 276.
 manila hemp, 276, 277.
 manufacturing: automobiles, 493, *494; chemicals, 492; factory shoe, 491; food industries, 495, 496; furniture, 497; Great Lakes region, 493-494; hardware, 491; iron, 496, 497; locomotives, 492; machinery, 493, 494; machine tools, 492, *492; milling, 493, 494; Mississippi River district, 494-496; needs, 489-490; New York to Buffalo region, 492-493; north-eastern coast region, 491-492; packing, 493, 494, 495; paper, 430, 491; regions, 491-497; ships, 492, 493, *496; Southeastern States, 496-497; specialization, 493; steel, 496; textile, 491, 496, 497, *497; tobacco, 496, 497; woolen goods, 492.
 Maoris (mā'ō-rīz), 325, *353, 353.
Maracaibo (mā'rā-kī'bō), (369 N1), 384, 385.
Maracaibo Basin, 384.
Maracaibo Lake, (369 N2), 384.
 marble, *77, 77.
 margarine, 153, 291.
Marquesas (mār-kā'sās) **Islands**, (324 O6), *356, 357.
Marseilles (mār-sāl'), (92 P3), 140, *144, 147.
Maskat (mās-kāt'), (3 P3), 26.
Matra Mountains, *183.
 matta, 393.
Maui (mā'ūō-ē), (274 Q2), (358), *358.
Maulmein (see *Moulmein*).
Mauritius (mō-rīsh'ī-ūs) **Island**, sugar, 449.
 meat, 457-462, (457), *458, *459, (460), (461), *462; Anglo-Egyptian Sudan, 297; Argentina, *402; Australia and New Zealand, 110, 335-336, *337, *339, 339, 341, 354; Brazil, 396, *396, 399; cattle, (458), 458, 459; fattening meat animals, 458, 461; meat and corn, 438, *438, 459, 461; meat belt, 459; meat farm, 458; poultry and eggs, *462, 462; sheep, (460), 460; swine, (461), 462; world market, 460.
 meat packing, *402, 404, 459, 460, 461.
Mecca (mēk'ā), (14 T3), *36, 36, 299.
Medellin (mā'thēl'yēn), (369 N2), 375.
Medina (mā-dē'nā), (14 S3), 36.
Mediterranean (mēd'tēr-ā-nē-ān), climate, 56-57, 279, 284, *303, 303, 346.
Mediterranean Countries, (6), (52-53), 50-86, 139, 173, 279; fruit, 447.
Mediterranean Sea, (14), (52-53), 30.
Mekong River, (215 T5), 260.
Melbourne (mēl-būrn), (327 R5), 340, 341, 344.
Memel (mē'mēl) (see *Klaipėda*).
Mendoza (mēn-dō'sā), (369 O6), 368, 407.
 Mercator's, Gerardus, projection, (515).
 meridian of Greenwich, 512, (512).
Mesopotamia (mēs'ō-pō-tā-mī-ā) (see *Iraq*).
 mesquite tree, 360.
 mestizos, 375.
 Metz (mēts), (92 P3), 142.
Mexico: cattle, 459; corn, 437; nuts, 453.
 Midnight Sun, 166.
Midway Islands, (324 K3), 360.
Milan (mī-lān') (see *Milano*).
Milano (mē-lān'ō) (Milan), (52 Q2), 70, 72.
 millet, 216, 217, 244, 249, 252-255, 283, 296, 299, 313, 314.
Minas Geraes (mē-nāsh zhā-rēsh'). 395.
Mn̄n (mīn) **River**, *221.
 mining (see *various minerals*).
 mohair, 304.
 Mohammedans and Mohammedan religion, 22, 36, *245, 245.
Mohenjo-daro, 253.
Moldau River, 171.
 Mollweide's projection, (516).
Mombasa (mōm-bā'sā), (278 R6), 320.
Monaco (mōn'ā-kō), (52 Q3), *54.
Mongolia (mōng-gō'lī-ā), (3 S2), (7), (215 S2), 9, *10, 218, 220, 224; wool, 484.
 Mongols, *9, 9, *10, 11, 87, 90.
Monrovia (mōn-rō-vē-ā), (278 M5), 292.
 monsoons, China, 226; India, 248; Indo-China, 260-261; Japan, 239.

Montana, The, South America, 420.
 Monte Carlo (môn'tê kâr'lô), *54.
 Montenegro (môn'tê-nê'grô), (117), 175, *178.
 Montevideo (môn'tê-vid'ê-ô; môn'tâ-vê-thâ'ô), (369 P6), 404, *404.
 moon, 510-511; phases of, 510, *510.
 Morava (mô-râ'vâ) River, (53 T3), (116 P5), 83, 177.
 Morava-Vardar (mô-râ'vâ-vâr'dâr) Corridor, (116 P5), 176.
 Moravia (mô-râ'vi-â), Moravian Corridor, 167, *170, 170, *171.
 Morocco (mô-rôk'ô), (52 N5), (280); Mediterranean region, 56-58, 62-66, 78, 85-86; mountain region, 17, 18, 22, 86, 279.
 Moros, 275.
 Moscow (môs'kô) (see *Moskva*).
 Mosel (mô-sê'l') River, *118.
 Moskva (môs'kvâ) (Moscow), (93 S2), 202, 205, *209, 209.
 Moskva River, *209.
 mosquitoes, 252, 286, 287, 203, *320, 320, 371, 377.
 Moul (mô'sool'), (3 P2), 35.
 Moulmein (Maulmein), (215 S5), 261.
 Mount Ililmani (êl'yê-mâ'nê), (362 Q4), *418.
 Mount Misti, *365.
 Mozambique (mô'zâm-bêk'), (278 R7), 320.
 mulberry trees (see *silk*).
 mule, 296, 299, 372, 373, *373.
 München (mûn'kên) (Munich), (92 Q3), (116 N4), 125, 133, 167.
 Munich (mû'nik) (see *München*).
 Murmansk (mûr'mânsk), (93 S1), 94.
 Murray (mûr'l') River and Valley, (327 Q5), 331, *334, 345-348.
 Murrumbidgee River, (345), 345, 347.
 Murzuk, 283.
 mutton (see *meat*).
 Mysore (mî-sôr'), (214 Q5), 249, 255.
 M'zab (m'zâb'), (14 P2), 17, 24, 25.
 Nagasaki (nâ'gâ-sâ'kê), (215 W3), 240.
 Nagoya (nâ'gô'yâ), (215 W3), 240.
 Nairobi (278 R6), 318, *319, 320.
 Nanking (nân'king'), (215 U3), 225.
 Nantes (nânts; nânt), (92 O3), 144.
 Naples (nâ'plz) (see *Napoli*).
 Napoli (nâ'pô-lê) (Naples), (52 R3), 66, *75, 75, 201.
 Natal (nâ-tâl'), (278 R8), (281); agriculture, 302, 304; climate, 301, 303, 304; government, 302; people, 302, 304, 310.
 naval stores, 141.
 navigable rivers: Europe, (124); South America, 370-373.
 negritos, *265, 266, 288.
 Negroes, Belgian Congo, *313; Congo, *322; East Africa, *319, *320; equatorial rain forest, *291, *292, 292, *293, 293, *294; Italian Somaliland, *300; Malay Peninsula, 265-266, *272; Pygmies, *281, *288, 288, *289, 289; South Africa, *305, *306, *323; South America, 378, 379, 393; Sudan, 296; Uganda, 312, *313, 317.

Nepal (nê-pôl'), (214 R4), 250.
 Netherlands India: coffee, (486), *486 (see *East Indies*).
 Netherlands (nêth'êr-lândz) (see *Holland*).
 New Caledonia (kâl'ê-dô'nf-â), (324 H8), 360.
 Newcastle (nû'kâs'l'), (101 O2), 106, 108, 109.
 New Guinea (see *Papua*).
 New Hebrides (hêbrî-dêz) Islands, (324 H7), 359.
 New South Wales (wâlz), (327 R4); grasslands region, 331-339; temperate agriculture region, 340-341, 347; tropical region, 341; climate, (330), 330, 331, 335-338, 341, 343, 347, 348; dairying, 340-341; fruits, *347, 348; irrigation, *336, 336; minerals, 349; people and population, 350; sheep and cattle, 331-341, 343; soil and surface, 342, *345, 345, 351; wheat, 342-344.
 newspapers, 427.
 New Zealand (zê'lând), (324 J10), (327); agriculture, 354; cities, 354; climate, 353; colonial possessions, 360; dairying, 354, 465, 466; forests, 354; fruit, 446, 447; future, 354; government, 100, 353; migrations to, 325; people, *353, 353, 354; sheep and cattle, 354, 461; soil and surface, 353, *354, 354; trade, 354; wool, 499.
 New Zealand Alps, (327 S5), 354.
 Nice (nês), (92 P3), 144.
 nickel, 314, 360.
 Nigeria (nî-jêrî-â), (278 O4), (280); equatorial rain forest region, 287-294, 297; grasslands region, 295-297; agriculture, 288, 289, 291, 292, 297; animals, 288, *290, 290, 295; cacao, *383; cattle, *296, 296, *297; climate, *282, 283-285, 287, 292, 295-297; cotton, 297, 483; government and people, 288, 296; trade, 291-293, 297.
 Nile (nîl) River and Valley, (14 S3), 27-31, 297, 299, *318.
 nitrates, 127, *162, 165, 412-413, *413.
 Nizhni Novgorod (nyzh'nyê nôv'gôrôt) (see *Gorki*).
 noria, 65.
 Normandie, 130.
 North Australia' (ô's-trâ'l'â-â-trâl'yâ), (326 P2); desert region, 331; tropic region, 338; cattle, 338-339; climate, (330), 330, 331, 338, 341, 343, 345, 348; people and population, 350.
 North Cape, (93 R0), 163.
 Northern Lights, 166.
 Northmen, 87, 90.
 North Pole, (512), 512.
 North Sea (92 P2), 144, 149, 153, 166, 167.
 Norway (nôr'wâ), (6), (92 P1); agriculture, (121), (122), 162-163; cattle and sheep, 461; cities, 166; climate, 94, 95, 163-165; dairying, 465; fishing, *164; forests, 163, 164, *165, 471; government, 151,

166; manufacturing, *162, 165; oats, 436; people, 166; soil and surface, 162, 165; trade and transportation, 163-165.
 Novo-Sibirsk, *208.
 Nürnberg, (116 N4), 124.
 nuts, 452-453, *452, *453, *468.
 Nyasa (nyâ'sâ), Lake, (278 R7), 314.
 Nyasaland, (278 R7), (280), 314-315.
 oases: Great Desert, *17, 17, 18, 23-26, 283; Egypt, 27-31, (280); Iraq, 32-35; Sinkiang Desert, 219; Thar Desert, 252.
 oats, 104, (121), 135, 156, 163, 168, 179, 185, 190, 192, 195, 200, 340, 354, 411, 435, 436.
 Ob (ôp) River, (3 Q1), 205, *208.
 obelisks, 29.
 Oberammergau (ô'bêr-âm'êr-gou'), *132.
 oca, 418.
 occupations, world, (211), 426-427.
 ocean currents, (91), 94, 95, 309, 409, 516.
 Oder (ô'dêr) River and Valley, (116 N3), 130, 167.
 Odessa (ô-dês'â), (93 S3), 198, 201, 209.
 oil (see *petroleum*).
 oil cake, 256.
 oil palm, (280), 291-293, 297.
 oil seed, (6), 227, 249, 250, 252, 254.
 olives, 22, *24, 25, 56, *62, 62, *64, (66), 66, *76, *86, 139, 173.
 Olympic games, 82.
 Oman (ô-mân'), (3 P3), 26, 36.
 Omsk (ômsk'), (3 Q3), 205, 209.
 opium, 44, 49, 256.
 Orange Free State, (278 Q8), (281); agriculture, 305; cattle, sheep, and goats, 302, 305; climate, 205, 301; diamonds, *307, 307; government, 302; people, 301, 302, 305.
 Orange River, (278 P8), 284, 301, 305, 307, 309.
 oranges: Australia, 346, *347, 348; China, 221, 230; Great Desert, 25; Mediterranean region, 65, (66), 81; South Africa, 285, *303, 303; South America, 411.
 orbit of the earth, 509.
 Orinoco (ô'rî-nô'kô) Basin, 380-382.
 Osaka (ô'sâ'kâ), (215 W3), 240.
 Oslo (ô'slô) (Christiania), (92 Q2), 108, 166.
 ostriches, (281), *304, 305.
 Ostraks, 199.
 Outer Mongolia (see *Mongolia*).
 oxen (see *cattle*).
 Pacific (pâ-sîf'îk) Isles (Polynesia), (324); agriculture, 356-359; future, 360; government, 357-360; location, 355; people, *355, 355, 357-359; trade, *356, 357-360. (Refer to specific islands by name.)
 Pacific Ocean, 79, (324), 355.
 Palermo (pâ-lâr'mô), (52 R4), 66, 75.
 Palestine (pâl'ês-tîn), (6), (14 S2), (52 NO67; 53 VW5): desert region,

- 13, 20, 22; government, 83, 84; Mediterranean region, 56-58, 61-66, *84; nuts, 452.
- palm oil, (280), 291-293, 297.
- palm trees, *17, 23, 25-29, *35, *267, *270, 270, 271, *273, 276, *277, *280, *291, 291, *320, *355, 355, 356.
- Palmira** (pāl-mī'rā), *34, 34.
- pampas (pām'páz), Argentina, 399-402, *399, *400, 400-401.
- Panama**, fruit, 445.
- paper, 165, 169, 170, 192, 196, 241, 430, *430.
- Papua** (pā'pōō-ā; pāp'ū-ā), (New Guinea), (7), (264 R3), (324 E6), *265, 266, 267, 271, 325.
- Pará** (pā-rā') (see *Belém*).
- Paraguay** (parā-gwā), (369 P5), 406.
- Paramo**, the, 377, 378.
- Paraná** (pā'rā-nā') River, (369 P5-6), 402.
- Paraná Valley**, (363 P6), (369 P6), 405.
- Paris** (pār'is), (92 P3), 138, 145-148.
- Patagonia** (pāt'ā-gō-nī-ā), (369 O7), 409.
- patch-and-thatch farming, 245, 364, 378-379, 386, 397, 405.
- Patiala**, 247.
- Patna**, (214 R4), 252.
- peaches (see *fruit*).
- peanuts: Africa, (280), 296, 297; China, 228; India, 249.
- pearl fishing, 35.
- pears (see *fruit*).
- peat, 114, 192, 194, 200.
- Peiping** (pā-pīng') (Peking), (215 U3), (218), 212, 216, 221, 225, 226.
- Peiraievs**, (53 T4), 81, *82.
- Peking** (pē'king') (see *Peiping*).
- pepper, (7), 254, 273.
- perfumes, 128, 139, *176, 179.
- Pernambuco** (see *Recife*).
- Persia** (pūr'shā; -zhā), (3 P3), (6): agriculture, 40; cities, 41; climate, 39, 40; future, 45; government, 45; highlands, 39; nuts, 452; opium, 44; people, 40, 41; petroleum, 44, 110; rainfall, 39, 40; rugs, 44, 507; size, 43; trade and transportation, *39, *40, 43-45; villages, 40, *41, *42, *45; wood, 42-43.
- Persian Gulf**, (14 U3), 22, (32), 35.
- Perth** (pūrth), (326 M4), 344, 349.
- Peru** (pē-rōō'), (362 N3-4), (369 N3-4), 414-416, *415, *416: sugar, *449.
- Peshawar** (pē-shā'wār), (3 Q3), 11.
- Petrograd** (pēt'rō-grād) (see *Leningrad*).
- petroleum, 425, *479, 479; Burma, 262; Iraq, (6), 35, 110; Persia, (6), 44, 110; Rumania, 185, *186; South America, 372, 384, 416; Sumatra, 271; U. S. S. R., *202, 202.
- Philippine** (fil'f-pīn; -pēn) Islands, (7), (274), (324 D4): abaca, 486; agriculture, *266, 275-276; climate, 265; education, 275; forests, 265, 276, 277; government, 275-276; hand embroidery, 506; migrations to, 325; people, *266, 266, 275, 276, *277; soil and surface, *266, *275, 276; sugar, 449, *449; trade, 276, 277.
- Phoenicians (fē-nish'ānz), 50-55.
- phosphate, 86.
- phosphate rock, 38.
- Pietermaritzburg**, (278 R8), 301.
- pigs (see *suine*).
- Pilsen** (see *Plzen*).
- pineapples, 272, *348, 358.
- pine trees, *141, 141.
- pirates, China, 229.
- Piraeus** (pi-rē'ūs) (see *Peiraievs*).
- Pisa** (pē-zā), (52 R3), 73.
- planets, 509, *509.
- plantains, 254.
- plant breeding, 467-468, *468.
- platinum, 202, 379.
- plums (see *fruit*).
- Plzen** (Pilsen), (116 N4), 171.
- Pnom-Penh**, (215 T5), 259.
- poi, 357.
- Poland** (pō'lānd), (6), (92 R2), (116 P3): agriculture, (121), (122), 135-137, 189-191; ancient greatness, 188; cities, *189, 189, 191; climate, 189; dairying, 465; foreign relations, 188, 189, 197; forests and lumbering, 110, *188, 191; government, 190; location, 187, 188; manufacturing, 190, 191; mining, 129, 190-191; Mongol invasion, 90; mountains, *188; partitions, 188; peat, 475; people, *188, 191; petroleum, *190, 190; Polish Corridor, 133, 189; soil and surface, *188; sugar, *449; trade and transportation, 189-191; wheat, 433, (434).
- polders, *152, 152.
- Polish Corridor**, 133, 189.
- Polynesia** (pōl't-nē'shī-ā) (see *Pacific Isles*).
- Pompeii** (pōm-pā'yē), (52 R3), *74.
- population: Old World, (307); South America, (381), 428-430 (see *APPENDIX for total and per square mile, all countries*).
- Po** (pō) River and Valley, (52 R2), 65, 68-71, 76.
- Port Elizabeth**, (278 Q9), 304.
- Port Nolloth** (nōl'loth), 309.
- Porto Montt**, (363 N7), 410, 411.
- Port of Spain**, (369 O1), 381, 382.
- ports (see *harbors*).
- Portugal** (pōrt'ū-gāl), (6), (52 N4), 56-58, 61-66, 79-81, (121), (122), 267, 287-294, 297, 320; dairy products, *466; people, 79.
- Portuguese Guinea** (pōrt'ū-gēs gīm'ī), (278 M4), (280), 287-294, 297.
- potash, 126, *127, 130, 142, 171, 190.
- potatoes, 427; Australia, 341, 346; Austria, 168; Baltic countries, 192; Belgium, 135, 136, 138; Bulgaria, 179; Czechoslovakia, 170; England, 104; Europe, (121); Finland, 195; France, 135, 136, 138; Germany, 122; Hungary, 133; Ireland, 114; New Zealand, 354; Norway, 162; Poland, 190; South America, 383, 411, 418, 431; Sweden, 162; U. S. S. R., 200.
- Potosi** (pō'tō-sē'), (362 O4), 418, 419.
- pottery clay, 142.
- poultry and eggs, *462, 462.
- Prague** (prāg) (see *Praha*).
- Praha** (prā'hā), (Prague), (116 N3), 167, 170-172.
- Pretoria** (prē-tō'rī-ā), (278 Q8), 302, *308.
- prime meridian, 512.
- Princes Island**, (278 O5), 293.
- protectorates, 100, 218, 302, 320.
- prunes: Australia, 347; Danube Valley, 173.
- Puerto Cabello** (puēr'tō kā-bēl'yō), (369 D1), 384.
- Puerto Rico**, sugar, 449.
- pumpkins, 283, 289.
- Punjab** (pūn-jāb') States, 247, 252.
- Punta Arenas** (see *Magallanes*).
- pygmies, *288, 288, *289, 289.
- pyramids of Egypt, *27, *29, 29, *30.
- Pyrenees** (pir'ē-nēz) Mountains, (52 O3), 60, 78, 140.
- quebracho (kā-brā'chō), 406.
- Queensland** (kwēnz'lānd), (327): desert, 345-346; grasslands, 331-339; temperate agriculture section, 340-341; tropics, 338; cattle and sheep, 331-341, 343; climate, 321, (330), 330, 331, 335, 338, 343-345, 347, 348; fruit, *348, 348; irrigation, *336, 336; people and population, 350; rabbits, 336; soil and surface, 341.
- quicksilver, 79.
- quinine (see *cinchona trees*).
- quinua, 418.
- Quito** (kī'tō), (369 N3), 419.
- rabbits, 135-136, 336.
- radio, *428, 429.
- radishes, 219.
- raffia, 322.
- railroads, (424), 425, 494, 495: Africa, 290, 293, 297, 300, 303, 310, 312-315, 319, 320; Albania, 178, 179; Australia, 349-351; Austria, 167; Balkan States, 177; Belgium, 150; China, 216, 225; France, 146; Germany, 125, 128-130, 133; India, 250, 255; Japan, *236, 242; South America, 365, 373, 393, 401, (402), 417; Switzerland, 160-161; U. S. S. R., *199, 204, 205, *208, 242.
- rainfall, *96, (432), (433): Africa, (56), *282, 283, 284, *285; Asia, (56); Australia, (56), (330); Europe, (56), 95; India, (248); Mediterranean region, 56-59; South America, 380-381, (381), 385, 398, 401-402, 410, 412, 413 (see *droughts; monsoons*).
- raisins, 49, 64, 347.
- Rand, The** (see *Witswatersrand*), 307.
- Rangoon** (rāng-gōon'), (215 S5), 262.
- rape seed, 227, 249.
- rayon, 485.
- Recife** (rā-sē'fā), (369 R3), 397.

reclamation, sea bottom, *152, 152, 156; swamps, 156, 185, 189.
Red Sea, (14 S3), 21, 22.
reindeer, (6), 196, *197, 199.
Reval (rǎ'vǎl) (see *Tallinn*).
Rhine (rín) River and Valley, (92 P3), (116 M3), 123, *124, 125, 149, 150, 153, 161, 167.
rhinoceros, 270, 295.
Rhodesia (rò-dě'zhí-à), (281), (278 Q7): agriculture, 314; cattle, *310, 314; government, 302, 313; minerals, 314; people, *310, 313, 314; Victoria Falls, *279.
Rhone (ròn) River and Valley, (92 P3), 125, 143, 144, 146, 170.
rice, 440-441, *440, (441): Africa, 289, 321; Brazil, 394; British Guiana, 387; Ceylon, 258; China, (7), *212, *226, 226, 227, *229, 229, 230, 235; East Indies, (7), 269, *270, 271; Egypt, 29; Hawaiian Islands, 358; India, 249, 250, 252, (254), 254, 255; Indo-China, (7), 261, *262; Japan, 235, 238, 239; Philippine Islands, *266, *275; Po Valley, 68.
Riga (rě'gá), (116 P2), 193.
Rio de Janeiro (rě'ō dā zhá-ná-rō), (369 Q5), (392), 392, *392-393, 395.
Rio Grande do Sul, (369 P6), 396.
Ripon Falls, *318.
rivers: deltas, 28, 226, 251, 252, 370; flood plains, 27-32, 182, 183, 224, 226, 232, 252, 260; navigable, (124) (see *waterways*; see also *various rivers by name*).
Riviera (rě-vyá'rǎ), (52 Q3), 66, *67, 72, 139.
Rjukan, *162.
Roaring Forties, 409.
Roma (rǒ'mǎ) (Rome), (52 R3), 73, *74, 74.
Roman Empire, 87, 97.
Rome (róm) (see *Roma*).
rosewood, 388.
Rostov-no-Donu (Rostov), (93 S3), 201.
Rotterdam (rót'ěr-dám), (92 P2), 108, 130, 153, *154, 154, 161.
Rouen (rōo-án'), (92 P3), 145.
rubber, 486-488, *487: Africa, (280), 290-292; Ceylon, (7), *256, 258; India, 254; Malaysia, (7), 280, *272, 272, 273; synthetic, 487, 488; South America, 364, 378, 390-391, *390.
Rudolph (rōo'dólf) Lake, (278 R5), 316.
rug weaving, *10, 44, 49, 82.
Ruhr (rōor) River, 128, 142.
Rumania (rōo-mǎ-ní-à), (6), (116 P4); Danube Valley, 181, 184; mountains, 184; agriculture, (121), (122), 181, 184, 185, *186, 200; București, 185; climate, 181, 185; fattening meat animals, 461; forests, 184-186; future, 185; government, 185; history, 168, 176, 182, 185; people and population, 184, *185, 185; petroleum, 185, *186; size, 184; trade and transportation, 185.

Russia (rűsh'á) (see *Union of Soviet Socialist Republics*).
Russkoye Ustye, (3 U1), 204.
Ruthenia (rōo-thě-ní-à), 167, 191.
Ruwenzori (rōo'wén-zō'rě) Mountains, (15 R6), 318.
rye, 435: Austria, 168; Balkan States, 179; Baltic States, 192; Europe, (121); Finland, 195; France, 140; Germany, 122; Great Britain, 104; Japan, 239; Mediterranean region, 76; Scandinavia, 162; U. S. S. R., 200.
Saar Basin (92 P3), 128.
Sahara (sǎ-hǎ'rǎ) Desert (see *Great Desert*).
Saigon, (215 T5), 261.
Saint-Etienne (sǎn'tā'tyě'n'), (92 P3), 142.
St. Moritz (mòr-it'z'), *161.
Saint-Nazaire (sǎn-ná'zǎr'), (92 O3), 144.
St. Thomas Island, (278 O5), 293.
St. Vincent (sǎnt vín'sěnt), Gulf of, (324 Q5), *344.
Saloniki (sǎ'lō-ně'kě) (see *Thessalonikē*).
salt, 126, 130, 412.
saltpeter, 412-413, *413.
Salvador, coffee, (486), *487.
Samarkand (sǎm'ar-kǎnt'), 41.
Samoa (sǎ-mō'án) Islands, (324 K7), 359, 360.
Samoyeds, 199.
sandstorms, 17.
San Juan (sǎn hwǎn'), (363 O6), 407.
San Ramon (sǎn rǎ-món'), 364.
Santa Marta (sǎn'tǎ mǎr'tǎ), (362 N1), 378.
Santiago (sǎn'tě-ǎ'gō), (369 N6), 368, 413.
Santos (sǎn'tōosh), (369 Q5), 393, 395.
São Paulo (souh' pou'lo), (369 Q5), 394-395.
São Salvador (souh' sǎl'vá-dōr') (Bahia), (369 R4), 397.
Sardinia (sǎr-dín'tǎ), (52 Q3), 61, 73.
satellites, *509, 510-511.
savanna land (see *grasslands*).
Saxons (sǎk'sún'z), 90.
Saxony (sǎk'sún-i), 129.
Scandinavia (skǎn'dí-nǎ'vi-à), (6), (88 P1), 162-166.
Scotland (skót'lǎnd), (6), (101 O2); cattle and sheep, 461; cities, 106, 108-110; climate, 95, 102; manufacturing, 107; nuts, 452; oats, 436; people, 103-104, 106-107; shipbuilding, 106-108; surface, *104 (see *Great Britain*).
seasons, 514.
Seine (sǎn) River, (92 P3), 125, *145, 145, 146, 148.
Senegal (sě'n'ě-gól'), (278 M4), (280), 297.
Serbia (sűr'bi-à), 168, 176, (268) (see *Yugoslavia*).
Serbs, 167, 175, 176, 178.
Serra do Mar, 392.
Sevilla (sǎ-vě'l'yǎ), (52 N4), 80.
Sfax (sfǎks). (14 Q2), 22.

s'Gravenhage (sgrǎ'vén-hǎg) (The Hague), (92 P2), 154.
Shanghai (shǎng'hǎ'i'), (215 V3), (218), 218, *228, 228, 230.
Shannon (shǎn'n) River, (101 N3), 114.
Shansi, 224.
Shantung (shǎn'tōong'), (215 U3), 232.
Shark Bay, (326 M3), 329.
Shatt-el-Arab (shăt-ě'l-ǎ'rǎb), *35.
sheep, (460), 460, 461: Andean Plateau, 418-419; Argentina, 400, *408; Asia Minor, (6); Australia, 331-337, *339, 343; Asiatic grasslands, *1, *4, 4, *8, 8, 9; Balkan States, 175, 179; Czechoslovakia, 170, *171; Denmark, 156; Ethiopia, 299; Europe, (122); Great Britain, 102-104; Great Desert, *19, 19, *23, 24; India, 249, 250; Mediterranean region, 56, 61, 64, 81; Patagonia, 409; Persia, 40; South Africa, 284, 304-306; Sudan, 297; U. S. S. R., *201.
Sheffield (shěf'eld), (101 O3), 109, 165.
Shetland (shět'lǎnd) Islands, (101 O1), 104.
Shikarpur, (214 P4), 252.
shipbuilding: Denmark, 108; development of, 426; France, 130; Germany, 108, 119, 131; Great Britain, 106-108; Holland, 108; Italy, 108; Norway, 108.
Shiraz, (3 P3), 41.
Shire (shir) Highland, 314.
Siam (si-ǎm'), (7), (215 T5): climate, 260; government, 260, *262, 262; people, 261, 262; rice, 261, *262, 262; teak, *261, 261; trade and transportation, 262, *263, 272.
Siberia (si-bě'r-i-à), (3, 1), (7), 198, 199, 204, *205, 205 (see *Union of Soviet Socialist Republics*).
Sicily (sis'i-lī), (6), (52 R4), 61, *65, 65, 66, 73, 77.
Sidon (si'dōn), 51, (52).
Siena (sě-ě'n'ǎ), (52 R3), *73, 73, *77.
Sierra de Santa Marta (syěr'rǎ dǎ sǎn'tǎ mǎr'tǎ), 378.
Sierra Leone (si-ěr'ǎ lě-ō'ně), (278 M5), (280); Equatorial Rain Forest region, 287-294, 297; grasslands region, 295-297.
Sierra Nevada de Merida, 383.
Sikhs (sěks), *245, 245.
Silesia (si-ě'l'shi-à), 129, 167, 190.
silk, 485: China, (7), 221, 229, 230, 233, 235; Chosen, 243; France, (6), 142, 143; Italy, 69; Japan, (7), 235, 238-239, 241; Syria, 83.
silkworms, 238-239.
silver, 349, 419, 482.
Simla (sim'lǎ), (214 Q3), 250.
Sinai (si'nī; si'nǎ-i), Mount, (2 O3), *221.
Sind, 252.
Singapore (sing'gǎ-pōr'), (264 N2), 271, 272.
Sinkiang (sín'kyǎng'), (214 R2), 218-220, 224.

- Si (sē) River and Valley, (215 T4), 230.
 sisal, *318, 318, 484, 486.
 Skopje (skóp'lyē) (Uskub), (116 P5), 177.
 Slavs (slāvz; slāvz), 90, 167, 182 (see *Yugoslavia*).
 sleeping sickness, 293.
 Slovakia (slō-vā'ki-ā), 170 (see *Czechoslovakia*).
 Slovaks (slō-vāks'; slō-vāks), 167, 182 (see *Czechoslovakia*).
 Slovenes, 168, *173, *176, 176, 178 (see *Yugoslavia*).
 Smeroe, Mount, *268.
 Smyrna (smūr'nā) (see *Izmür*).
 snow fields, 162, 165.
 Soenda, Strait of, 269, 271.
 Sofia (see *Sofija*).
 Sofija (sō'tē-yā; sō-fē'ā), (116 P5), 179.
 soil: alluvial, 28, 32, 68, 182, 183, 223, 251, 254, 260, 397; glacial, 189, *194, 194; loess, 168, 185, 224, *225; volcanic, 255, 269, 276, 357.
 solar system, *509, 509-510.
 Solomon (sō'lō-mūn) Islands, (324 C6), *355, 359.
 Somaliland (sō-mā'lē-lānd") (British; French; Italian), (278 S5), (280), 298-300.
 Soochow (sō'shō'), (215 V3), 228.
 sorghum, (254), 296, 299, 305, 306, 310, 314, 438.
 soroche, 418.
 South Africa, Union of, (278 Q9), (281): Florida climate section, 303-304; high plateaus, 309; Kalahari Desert, 309; Mediterranean climate section, 303; steppes, 304; veldts, 304-305; agriculture, 302, 304, *305; cattle, sheep, and goats, 302, 304, 309; cities, *301, 304, 307; climate, 301, 303, 304, 309; coal, 478; corn, (437), 439; fruit, 446; government, 100, 302, 309; minerals, *307, 307, *308, 309; people, 302, 303, 304, 307, 309; surface, *302, 304, 309; trade, 304, 307, 309; wheat, 433, 434.
 Southampton (south-āmp'tūn), (101 O3), 110, 145.
 South America, (362-363), (366-367), (369), (381), 421: agriculture, 376, 377, 378-379, 386, 398-397, 402, 404, 406, 411; animals, 372, *373, *379, 384, *396, *399, 399, 405, 407-408, 409, *417, 417; cities, 365, 370, 375, *376, 376-377, 381, *385, *392-393, (392), 394, 397, *401, 401, 431; climate, 368, 372, 376-377, 381, 385, 401, 410, 412, 418; crops, 365, 371, 374-375, 378, *383, 384-386, *391, 391, *394, 395, *400, 401, 406, 407, 415, 418, 431; forests, *364, 364, 378, 380-381, 387, 389-390; government, 386, 397; Japanese migration to, 242, 394; people, 372, 378, (381), 386-387, 393-394, 399, 403, 413, 418-419; political divisions (refer to particular sections by name); resources, 372, 384, 387, 390-391, 395, 412-413, 419; rivers, *361, 361, *370, 370-373, *389, 389; soil and surface, 361-368, 376-377, 380-381, 382, 392-393, 398-399, 405, 407, 416, 417, 420; trade, 372, 375, 381-382, 395, 400-401, 412.
 South Australia, (326 P4): Desert, 345-346; grasslands, 331-339; Mediterranean climate section, 346; cattle and sheep, 331-341, 343; climate, 329-331, 335, 338, 345, 346; irrigation, 329, 345; minerals, 349; people and population, 350; soil and surface, 342, *344, 345; wheat, 342-344.
 South Cape, (327 G), 353.
 South Pole, 512, (512).
 Southwest Africa, (278 P8), (281), 302, 309.
 Soviet Republics, 198 (see also *Union of Soviet Socialist Republics*).
 soy beans, 216, 217, 227, 230, 243, 250.
 Spain (spān), (6), (52 N3), (92 O3): Mediterranean section, 56-58, 61-66, 81-97; plateaus, *80, 81; agriculture, 55-69, 81, (121), (122); Arabs, 22; chestnuts, 59-61; climate, 56-58, 65; colonial possessions, 85; dairy-products, *466; fruit, 448; explorations, 79; government, 80; grapes, 63, (66); iron, *79, 79; language, 80; manufacturing, 79; minerals, *79, 79; nuts, 452; olives, 62-63, *64, (66), 66; oranges, (66), 81; people, 79, 80; settlements, 79; sheep, 81, (122); trade, 79; vegetables, 444.
 spices: Africa, (280); Ceylon, 258; East Indies, 267.
 spinning, *4, 4, *21, *105, 105, 175, 216.
 springs, Great Desert, 17, 18.
 Srinagar (srī'nā-gūr'), (214 Q3), 249.
 Stalingrad (stā-lēn'grād), *207, 208.
 Stanley (stān'lī) Falls, (278 Q5), 290.
 steamship lines, 426-427, (427).
 steel manufacturing, 480, *480, 488, 494: Belgium, (6), 149, 150; France, 142; Germany, *128, 128, 130, 133, 142; Hungary, 183; U. S. S. R., 208.
 steppes, *1, 1, 201, 204, 208, 304.
 Stettin (shē'tēn'), (92 Q2), 108.
 Stewart (stū'ēr Island, (327-G), 353.
 Stockholm (stōk'hōlm), (92 Q2), 166.
 Strasbourg (strās'boor'), (92 P3), 142.
 Sudan (sōo'dān'; sōo-dān'), (280), 295-300.
 (Refer to countries by name.)
 Suez (sōo-ēz'; sōo-ēz) Canal, (14 S2).
 Suf (soof), (14 P2), 23, 24.
 sugar beets, (121), 122, 135-138, 155, 170, 172, 183, 190, 200, (450), 450, *451.
 sugar cane, 448-449, (450): Africa, 276, 277, (281), 299, 304, 320; Argentina, 407-408; Australia, 341, 348; Brazil, 397; British Guiana, *386, 387; China, 221; Colombia, 371-372; Egypt, 29; India, 252, 253; Java, *269, 269; Philippines, (7), 276, 277; Taiwan, 242; Venezuela, 384.
 sugar maple, 448, *449, 450.
 Sukkur, 252.
 sulphur, 77, 195.
 Sumatra (soo-mā'trā), (7), (264 M2), 265-272, 275, 487.
 swamps, 260, *275, 286, 320, 378, 384; reclamation, 156, 185, 189.
 Sweden (swē'dēn), (6), (92 Q1): agriculture, (121), (122), *162; cattle and sheep, 461; cities, 166; climate, 163-165; dairying, 163, 465; flax, *485; forests and lumbering, 162-164, *165, 168, 200, 203, 471; manufacturing, 165, 166; mining, 165; oats, 436; soil and surface, 162, 165; trade and transportation, 163; water power, 143, *165, 202.
 sweet potatoes: Africa, 283, 289; China, *227, *229, 229; Japan, 239; Philippine Islands, 276.
 swine, *60, 60, 61, 63, 102, (122), 156, 175, 179, 216, 223, (461), 462.
 Switzerland (swit'zēr-lānd), (6), (116 M4): agriculture, (121), (122), 158-161; cities, 161; climate, *151; dairying, *159, 159, 161, 169, 466; forests and pasture, *159, 159, 161; government, 151, 166; languages, 90, 161; laces and ribbons, 506; manufacturing, *160, 160, 161; nuts, 452; people, 160, 161, 166; soil and surface, *151, *158, 158, 160-161; tourist industry, *161, 161; trade and transportation, (124), 125, *160, 160, 161; water power, 143, *160, 160, 161; wheat, 433, (434).
 Sydney (sīd'nī), (327 S5), 330, 335, 339-341, 344, *345, 348-351.
 Syria (srī'r-ā), (3 O3), (6), (52): Desert, 13, *34, 34; Mediterranean section, 56-58, 62-66, 83; nomads, 20; nuts, 452.
 Table Mountain, 286.
 Tagalogs, 275.
 Taganrog, (93 S3), 201.
 tagua, *377, 378, 417.
 Tahiti (tā'hē-tē; tā-hē'tē), (324 N7), 357.
 Taiga (tī'gā), (6-7), *198, 199, 204.
 Taiwan (tī'wān') (Formosa), (215 V4), 232, 242.
 Taj Mahal (tāj mā'hāl'), *247.
 Tallinn (tāl'līn) (Reval), (116 P2), 193.
 Tanganyika (tān'gān-yē'kā) Lake, (278 Q6), 290, 316.
 Tanganyika Territory, (278 R6), (280); lowlands, 320; plateaus, 316-319.
 Tangier (tān-jēr'), (52 N4), 85.
 tannin, 304.
 Taormina (tā-ōr-mē'nā), *65.
 tar, 126.
 Tarim (tā-rēm) River, (214 R2), 219.
 taro, 357.

tasago: Argentina, 399; Brazil, *396, 396.
 Tashkent (tásh 'kěnt'), 41.
 Tasmania (táz-mā'ní-á), (327 R6): apples, 347; climate, (330), 330, 331, 347; fruit, 446, 447; government, 329; people and population, 350; sheep, 331-337; surface, 347; tin, 349.
 Taurus Mountains, 46.
 tea, 486, (486): Africa, 304, 314; Ceylon, *256, 258; China, (7), 229, 233; East Indies, 270; India, (7), 250, 256; Japan, (7), 239, *240; South America, 397.
 teak, (7), *261, 261.
 Teheran (tê-hê-rān') (see *Tehran*).
 Tehran (tê-rān'), (3 P3), (6), 41.
 telegraph, 427, *428, 429.
 telephone, *428, 429.
 temperature, 91, (94), (95), *96, (285); effect of Gulf Stream, 94, 95.
 terrace farming, 26, *59, 59, *64, *67, 69, 83, *118, 123, *174, *212, *229, 238, *266, 270, *271, *271, 414, 420.
 Teutonic (tô-tôn'k) peoples, 90.
 textiles, (6-7), 129, 130, 142, 143, 149, 172, 191, 254 (see *cotton*; *linen*; *silk*; *wool*).
 Thames (tēmz) River, (101 O3), *97, *110, 112.
 Thar (thr) Desert, (India Desert), (7), (214 Q4), 248, 253.
 thatch-and-patch farming, 245, 364, 378-379, 386, 397, 405.
 Theiss River (Tisza River), (116 P4), 182.
 Thessalonikē (Saloniki), (53 T3), 82, 177.
 Tibet (tib'et; ti-bēt'), (7), (214 R3), 218-220.
 tick land, 381, 405.
 tides: cotidal lines, *511, 511; ebb, 511; height, 511; high, 511; low, 511; map, 511; sea level, 512; spring, 511; tide race, 512.
 Tien Shan, (214 Q2), 219.
 Tientsin (ti-ên'tsén'), (215 U3), 225, *227.
 tiger, 270.
 Tigris (ti'grīs) River, (2 P3), (32), 32, time, 513; standards, 513.
 Timor, (264 P3), 267.
 tin, 429, 488; Africa, (280), 293, 296, 315; Australia, 349; Bolivia, 419; China, 229; East Indies, 271; England, 50-51; Malay Peninsula, (7), 273.
 Tisza (tê'sô) River (see *Theiss River*).
 Titicaca (tê'tê-kā'kū) Lake, (369 O4), *417, 417.
 tobacco, (441), 497: Afghanistan, 250; Africa, (280), 314, 320; Balkan States, 175, 179; Brazil, 397; Greece, 82; Philippine Islands, (7), 277; Sumatra, 270; Turkey, 49; U. S. S. R., 209.
 Tokyo (tô'kē-ô), (215 W3), 237, 240.
 Tonkin (tôn'kin'), (215 T4), 259.
 ton mile, 421, 425.
 Torino (tô-rê'nô) (Turin), (52 Q2), 70, 72.
 Toulon (tôô'lôn'), (92 P3), 144.

Townsville, (327 R2), 340.
 tractors, *187, *198, *207, *269, *275, *287, *298, *300, *318.
 trade: early, 429; kinds of, 499, 500-501; necessity for, 429, 430, 431, 488, 498-499, 508; tariff, 501, 503; world, (502-505).
 trade winds: Great Desert, 16; Gulf Stream, 94; Hawaiian Islands, 357, *358; South America, 304, 321; South America, 370.
 Trans-Caucasia (trāns'kô-kā'shī-ā), 198.
 Transjordan (trāns-jôr'dān), (14 S2), (32), 36-37.
 transportation: airplane, *364, 364; automobile, 425; beasts of burden, 425; bus, 425; canals, 492-493, 494; caravan, *12, *17, 21, 22, 33, 34, *38, *39, *40, 70, *221, 300; free sea, 426; man power, *34, *39, *40, 70, *221, *263, (281), *289, *292, 293; mules, *373, 373, 375; ocean, 426, (427); ox carts, 221, 310, *334, 387; railroads, (424); ships, 426; ton mile, 421, 425; trucks, 425.
 (See *navigable rivers*; *railroads*; *trade routes and centers*; *waterways*).
 Trans-Siberian Railroad, *199, 204, *208, *210.
 Transvaal (trāns-vāl'), (278 Q8), (281); agriculture, *305; cattle, sheep, and goats, 305; climate, 301, 305; coal, 309; people, 301, 305.
 Transylvania (trān'sil-vā'nī-ā), 184.
 Trinidad (trín'tād'), (369 O1), 381, 383.
 Tropic of Cancer, 515.
 Tropic of Capricorn, 515.
 truck farming, 444; (see *vegetables*).
 tsetse fly, 293, 320.
 Tucumán (tôô'kôô-mān'), (369 O5), 407.
 tundras, (6-7), *196, 196, *197, 197, 199, 204.
 tung oil, 233.
 tungsten, 228.
 Tunguses (tôôn-gôôz'ez), 199, 204.
 Tunis (tū'nīs) (see *Tunisia*).
 Tunisia (tū-nīsh'i-ā), (14 Q2), (52 Q4), (280); Desert, 13-26, 283; Mediterranean section, 56-58, 62-66, 78, 85-86; migrations to, 90.
 Turcomans (tôor'kô-mānz), 9, *10, (11), 11, 47.
 Turin (tū'rín) (see *Torino*).
 Turkestan (tôor'kê-stān'), (3 Q2), (6-7), 198, 204.
 Turkey (tūr'ki), (3 O3), (6), (53 U3); Asia Minor Plateau, 46, 47, *49; Mediterranean section, 46, 56-58, 62-66, *78, 78; agriculture, *46, 46, 49, (121), (122), 304; cities, 48, 78; climate, 47; early empire, 176; exports, 49, 82; future, 49, 82; government, 47, 78; migrations to, (11), 11, 47; modernization, 47, *48; surface, 47.
 Turku (tôor'kôô), (Åbo), (92 R1), 196.

turpentine, *141, 141.
 Tuscan (tūs'kā-nē), *73, 73.
 two-crop farming, 217, 222, 230.
 Tyne (tin) River, (101 O2), 108.
 Tyre (tir), 51, (52).
 Tyrol (tir'ôl), Austrian, *169.
 Ubangi River, (278 P5), 283.
 Uganda (ôô-gān'dā; ū-gān'dā), (278 R5), (281), 312, *313, 316-319.
 Ulan Bator-Hito, *10.
 ulloca, 418.
 Ulm, *119.
 Union of Soviet Socialist Republics (sô'vyet'), (3), (6-7), (93): farm-forest section, *199, 199, 200, 204; grasslands, 199, *200, 200, 204, *205; steppes, 201, 204, 208; taiga, *198, 199, 204; tundra, 199, 204; agriculture, (121), (122), 135-137, *187, *199, 200, *201, *203, 203, 205; cities, 199, 205, *206, 208-209, *210; climate, *198, 199-204; corn, (437), 438; forests and lumbering, *198, 200, 202, 203, *204, 471; foreign relations, 188, 189, 197, 232, 242-244, 250; government, 198, 207, 209; history, 187, 198; irrigation, 208; languages, 199; manufacturing, 207-209; migrations, 87, 90; minerals, 202; peat, 475; people, 199, 200, 202, *203, 203, *205, 207; rainfall, 201; resources, *202, 202; rubber-yielding plants, 487; sheep, *201; size, 198, 202, 204; soil and surface, *187, 199, 200, *201, *203, 203, 205; trade and transportation, *201, 201, 203, 204, 205, *208, *210; water power, 202, *207, 207, 208; wheat, 200-202, 434, (434), 435.
 United States (Plate II): agricultural resources, 467-470; aluminum, 482; beans, 442; cattle, (458), *458, 459, 461; cement, 482; coal, 475-477, (478), (481); corn, 436, (437), *437, 437, 438; cotton, 483, (483), 484, (484), *485; dairy-feeding, 464, 465, (466), *466; dependence on other nations, 486-488; drainable land, (467), 467; erosion, 468-470, *469, (469), 470; exports, 504, 505; forest resources, 471-474 (see *forests and lumbering*); fruit, 445, *445, 446, (447), 447, 448; glass, 482; gold, *482, 482; imports, 486, 504, 505, 506; iron, 480-482; lead, 482; manufacturing regions, 491-497 (see *specific region under manufacturing*); meat industry, 460; meat packing, 459, 460, 461; nuts, 452, *452, 453; peat, 475; petroleum, 479; rayon, 485; resources for manufacturing, 490-491, 497; rice, 440, (441); rubber, necessity for, 487-488; sheep, (460), 461; silver, 482; sorghums, 438; sugar, 449, 450, (450), *451; swine, (461), 462; trade, 500, 501-504; truck farming, 444; unused land, 467; vegetables, 444; wheat, 432, 433, 434, (434), 435, *508; wool, 484, 499; zinc, 482.

United States, Possessions: Guam, 360; Hawaiian Islands, 357-358; Midway Islands, 360; Philippine Islands, 265-277; Samoan Islands, 358.

Ural (ü'rál) Mountains, (93 U1), 202, 208.

Urga, (215 T2), *10.

Uruguay (ü'rōo-gwā; öö'rōo-gwī'), (363 P6), (369 P6), 403-404, 460.

Uskub (üs'küb) (see *Skoplje*).

Uskudar, 47.

Vaal (vāl) River, (15 R8), 302, 305.

Valdivia (vāl-dē-vyā), (369 N6), 413.

Valencia (vāl-lén-shí-á), (52 O4), 65, 66.

Valparaiso (vāl'pá-rā'zō), (369 N6), 410, 413.

vanadium, 309, 314.

Vandals (vān-dālz), 90.

vanilla, 321.

Vardar (vār'dār) River, (53 T3), (116 P5), 82, 176.

Vatican (vāt'f-kān) City, *74, 75.

vegetables, 443-444, (444): Africa, 25, (280), 283, 289, 314; Australia, 346; canning, *43, 444; China, 227, 229; Europe (northwestern, central and eastern), 134, 138, 149, 153; India, 249; Japan, 239; Mediterranean section, 65, 66; Philippines, 276; shipping, 444; South America, 377, 402.

vegetation, natural, (471).

Veldt, 305.

Venezia (vā-nā'tsē-ā) (Venice), (52 R2), *70, 70, 132.

Venezuela (vén'ē-zwē'lā), (362 O2), (369 O2), 382-383, (486), *486.

Venice (vén'is) (see *Venezia*).

Verona, *71.

Vesuvius (vê-sū'vī-ūs) (Vesuvio), Mount, (6), (52 R3), *75, 75.

Victoria (vīk-tō'vī-ā) (Australia), (327 R5); Desert, 345-346; grasslands, 331-339; Mediterranean climate section, 346; temperate agriculture section, 340-341; cattle and sheep, 331-341, 343; climate, (330), 330, 331, 335, 338, 341, 343-347; dairying, 340-341; irrigation, 345; minerals, 349; people and population, 350; soil and surface, 342-345; wheat, 342-344.

Victoria (China), *230.

Victoria Falls, (15 R7), *279, 315, 322.

Victoria Lake, (278 R6), 312, 317, *318.

Vienna (vê-ñ'ā), (see *Wien*).

vitamins, 443.

Vladivostok (vlā'dī-vōs-tōk'), (3 T2), (242), 205, *210, 242.

volcanic soil, 255, 269, 276, 357.

volcanoes, (6), *234, 234, *268, 269, *365.

Volga (vōl'gā) River, (93 T2), 202, 204, 205, *206.

Wales (wālz), (92 O2) (see *Great Britain*).

walnuts (see *English walnuts*).

Walvis (wāl-vīs) Bay, (278 P8), 309.

Warsaw (wōr'sō) (see *Warszawa*).

Warszawa, (116 P3), 188, 191.

watchmaking, 160.

water power, 426, *490-491, 491, 496: Africa, 322; Austria, 169; Finland, 195; France, 142; Germany, *120, 143; Ireland, 114; Italy, 71, *72, 72, 143; Japan, 241; Norway, (7), 143, *162, *165, 165, 202; Palestine, 84; Rumania, 135; South America, 395, *406, 413; Spain, 79, *80; Sweden, 143, *165, 165, 202; Switzerland, 143, *160, 160, 169; U. S. R., 202, 207-208; Yugoslavia, 180.

wax, 299.

weaving, *4, 4, *10, 44, 82, 105, 175, 216.

Wei-hai-wei (wā'hi'wā'), (215 V3), 232.

Wellington (wēl'ing-tūn), (327 5), 354.

wells, artesian, 37, *336, 336.

Wesel, *124.

Weser (vā'zēr) River, (116 M3), 130.

West River (see *Sí River*).

Western Australia (326); desert, 345-346; grasslands, 331-339; tropic section, 338; cattle and sheep, 331-341, 343; climate, 329-331, 335, 338, 341, 343, 348; minerals, 349; people and population, 350; soil and surface, 342, 346; wheat, 342-344.

Westphalia (wêst-fā'lē-ā), 128.

whaling, 164, 309, 456-457, *457.

wheat, 432-435, (434): Africa, 284, 299, 306; Australia, 109, 342-344; Austria, 168; Balkan States, 175, 179; Belgium, 135, 136, *138, 138, 139; China, 216, 217, 221, 227; Czechoslovakia, 170; Danube Valley, 173, 181, 185, 200; Egypt, 27; Europe, (121); France, 135, 136, *138, 138, 139; Germany, 122; Great Britain, 104, 106, 109; India, 249, 250, 252, 253, 255, 256; Iraq, 35; Japan, 239; Mediterranean section, 56, 57, *58, 64, 69, 81; New Zealand, 354; Persia, 40; Poland, 190; South America, 365, 368, 376, 400, 401; Transjordan, 37; Turkey, 46; U. S. R., 109, 199, *200, 200.

White Nile River, (278 R4), 318.

White Sea, (93 S1), 203.

Wien (vên) (Vienna), *167, 167, 169, 183.

wind, *514, 516.

Windau, (116 P2).

Windermere (wīn'dēr-mēr) Lake, (101 O3), *113.

Windhoek, (278 P8), 309.

winds: monsoons, 226, 239, 248, 260, 261; protection from, 65; trade, 16, 94, 304, 321, 357, *358; windstorms, 17; world system, 94, 95 (see *climate*).

wireless, *428, 429.

Witswatersrand (The Rand), 307.

wood pulp, (6), 165, 169, 192, 195.

wool, 4, 49, 102, 109, 142, 143, 179, 201, 221, 233, 250, 256, (280), 335-336, 354, 400, 484 (see *sheep*).

yak, *219, 219.

Yakuts, 204.

Yakutsk (yā-kōōtsk'), (3 T1), 204.

Yangtze (yāng'tsē') River and Valley, (215 U4), 223, *226, 226, 228, 229, 230, 260.

Yellow Sea, (215 V3), 224, 242.

Yemen (yēm'en), (14 T4), 26, 36.

yerba maté, 396-397, 406.

Yokohama (yō-kō-hā'mā), (215 W3), 240.

Yorkshire (yōrk'shīr), 109.

Yucatan, sisal, 486.

Yugoslavia (yōō'gō-slā'vī-ā), (6), (93 Q3), (116 O4); Dalmatian coast, 173, *174; Danube Valley, 173; mountains, 173, *174, 175; agriculture, (121), (122), 173, *174, 175, 179, 180; cities, *178, *179, *180; climate, 173; fattening meat animals, 461; forests and lumbering, *177; future, 180; government, 178; home manufacturing, 175, 179; minerals, 180; Morava-Vardar Corridor, 176; nuts, 452; people, *173, 175, 176, 178, 180; surface, 173, *174, 175, *176, *177, *178; trade and transportation, 173, 175, 179, 180; village life, *174, 175, 179.

Yunnan (yōōn'nān'), (215 T4), 229.

Zagreb, *180.

Zambezi (zām-bē'zī) River, (278 Q7), *279, 301, 320, 322.

Zanzibar (zān'zī-bār'), (278 R6), 320, Zebra, (280), 295.

Zeebrugge (zā'brōōg'ē), *149.

zinc, 482: Africa, 314; Belgium, 149; Finland, 195; Poland, 190. zones, 515-516.

Zuider Zee (zī'dēr zā'), 152, 154.

Zurich (zōō'rik), (92 P3), 161.

PHYSICAL AND POLITICAL MAP

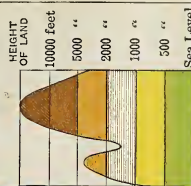
OF ALASKA

SCALE OF MILES



- Terrestrial Capitals
- Provincial Boundaries
- International Boundaries
- Steamship Lines

REFERENCE



Copyright, The John G. Wenton Co.





Date Due

[illegible]

EDUCATION LIBRARY

UNIVERSITY OF ALBERTA
EDUCATION LIBRARY

Smith

G

126

S65 H9

bk. 2

121540

UNIVERSITY OF ALBERTA
EDUCATION LIBRARY



PATENTED SEPT. 22, 192

COMPACT STORAGE

CURRICULUM

G 126 S65 H9 bk.2 c.1

Smith, J. Russell (Joseph)

Human use geography,

EDUC



0 0004 3262 914

